



A PRELIMINARY TAXONOMIC REVIEW OF *GRASTIDIUM* BLUME AND *ERIOPEXIS* (SCHLTR.) BRIEGER (ORCHIDACEAE)

by

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ABSTRACT:

The genus *Grastidium* Blume is characterised and circumscribed as distinct from the remainder of *Dendrobium* Sw. based on a study of living plants, types, illustrations and the literature. The results of a phylogenetic analysis of *Dendrobium* subgen. *Xerobium* Schltr. provides evidence that *Dichopus* Blume is part of *Grastidium* and is here treated at subgeneric rank, whereas *Eriopexis* (Schltr.) Brieger is isolated by the possession of two synapomorphs and is maintained as a separate genus. All species attributable to *Grastidium* and *Eriopexis* are listed, and where necessary, new combinations are made. Where known, details of the types, published illustrations, distribution and ecology are provided for all listed species. Colour plates and illustrations are provided as examples of the genera.

The genus *Grastidium* was described in 1825 by the German born Dutch botanist Carl Ludwig Blume, based on specimens collected in Java (Blume 1825). He characterised the genus as a group of orchids with non-bulbous stems; linear-lanceolate membranous leaves sheathing at the base; peduncle opposite the leaves or lateral, usually with 2 flowers, these breaking out of pale, horny bracts. Three species were described at the time, viz. *G. acuminatissimum* Blume, *G. salaccense* Blume and *G. rugosum* Blume, all with lanceolate or linear-lanceolate leaves. Presumably the generic name refers to the grass-like habit or grass-like leaves (Greek, *grastis*, grass) of these orchids. Lindley (1830-40), in *Genera and Species of Orchidaceous Plants* reduced five of Blume's genera, including *Grastidium*, to synonymy under *Dendrobium* Sw. because they "have no characters to distinguish them".

In a more formal treatment of *Dendrobium*, Lindley (1851) included *Grastidium* in sect. "Eudendrobium" Lindl. stating, "In this genus there is found to be so large a number of species, having such widely different habits, that Botanists, at an early period of their acquaintance with them, were led to create many supposed genera, the distinctions among which are now found to be unreal or unimportant". Lindley however, provided no supporting scientific evidence for this claim. Despite this lack of evidence, Lindley's interpretation of *Dendrobium*, accepted by prominent botanists such as Reichenbach (1961), Bentham and Hooker (1883), Hooker (1890), Smith

(1905b), Schlechter (1905, 1911-14), has predominantly prevailed so that today there is a popular concept of a very large, highly variable and cumbersome concept of *Dendrobium* that includes *Grastidium*.

Grastidium was first treated at sectional level within *Dendrobium* by Smith (1905b), who retained Blume's original concept of the group whilst adding only one further species, viz. *D. planum* J. J. Smith. Just prior to this, Schlechter (1905) created *Dendrobium* section *Dianthe* to accommodate those species with a two-flowered inflorescence and included six species, two of which he later treated as belonging to other sections. Schlechter (1911-14) in his major thesis on the *Dendrobiinae*, divided *Dendrobium* Sw. into four subgenera, viz. *Athecebiium*, *Dendrobium* (as *Eu-Dendrobium*), *Rhopalobium* and *Xerobium*, this subdivision being based entirely on vegetative characters. Subgenus *Xerobium* Schltr. was defined as those species "possessing leaves with distinct sheaths and, stems wiry, dry and always very slender". Schlechter recognised 11 sections within *Xerobium*, viz. *Aporum*, *Oxystophyllum*, *Grastidium*, *Dichopus*, *Eriopexis*, *Pleianthe*, *Macrocladium*, *Dolichocentrum*, *Conostalix*, *Monanthos* and *Herpethophytum*, describing many new species including 63 in section *Grastidium*. Most subsequent authors have accepted this concept and continue to treat *Dendrobium* in the arrangement established by Schlechter. More recently, Brieger (1981) chose an altogether different approach.

In his 1981 treatment of the *Dendrobiinae*, Brieger created what he called "Genera-Series",

grouping together taxa from subtribes Dendrobiinae and Eriinae. In genus-series *Caulescentes*, where he grouped together species-treated in *Dendrobium* subgen. *Xerobium* and *Eria* Lindl. subgen. *Cauleria* Schltr. (Schlechter 1911-14), he reinstated *Grastidium* to the level of genus. Brieger's proposed system of classification of these orchids has not met with favour amongst most contemporary botanists. However, our research on this group of orchids shows that Brieger's treatment required further consideration. Our own preliminary phylogenetic analysis of the group (Clements and Jones in prep.) and studies into the morphology, reproductive biology and general biology of these plants, provided clear support for at least part of what Brieger had proposed.

In reinstating *Grastidium*, Brieger (1981) retained the unity of *Grastidium sensu* Schltr., at sectional level, but expanded the generic concept to include two new sections formerly treated as sections of *Dendrobium* by Schlechter (1911-14), viz. sect. *Macrocladium* Schltr. and sect. *Pleianthe* Schltr. He characterised section *Grastidium* by the "strongly compressed inflorescences, whereas the one or two flowers extend only beyond the tightly-packed scales or bracts by virtue of the length of their flower stems". *Grastidium* sect. *Macrocladium* by comparison was characterised by "the flower-forming part is greatly extended, such as for *D. sarcochilum* (Finet) Brieger" whereas section *Pleianthe* was distinguished by the compressed racemes in a multiflowered inflorescence.

In his treatment of *Grastidium*, Brieger (1981) only formerly transferred nine species from *Dendrobium*. This left a large number of species in *Dendrobium* and it was Rauschert (1983), apparently with very little knowledge of the taxa involved, who transferred the majority of species to *Grastidium*.

THE STATUS OF DICHOPUS AND ERIOPEXIS

Since its creation by Blume in 1856, the status of the genus *Dichopus* Blume has been the subject of much debate. Miquel (1855) treated this taxon as part of *Dendrobium* Sw. under the now illegitimate section *Eudendrobium*. *Dichopus* was, however, accepted at generic rank by Bentham and Hooker (1883) and later by Finet (1909), as being distinct from *Dendrobium* based on the possession of a peculiar appendage to the column below the stigma. Smith

(1909) treated it at sectional rank within *Dendrobium* Sw. as part of section *Grastidium* (Blume) J.J. Smith. Kraenzlin (1910) included it in the now illegitimate section *Eugrastidium* Kraenzl. Schlechter (1911-14) in his thesis on the Dendrobiinae, treated it as a section within subgenus *Xerobium* Schltr. while pointing out the significance of the differences between *Dichopus* and *Grastidium*. *Dichopus* resided there until Brieger (1981) reinstated it to generic rank, noting that it differs from *Grastidium* only in that the column foot carries a split tooth-like extension beneath the stigmatic depression and which extends to the labellum-plate; and in the robust stem axes and broad-ovate blunt leaves. From examination of the stigmatic appendage on fresh flowers, it is clear that this tissue is derived from the basal lobe of the stigma. Its exact function is unclear but it seems likely that it has developed as part of the pollination mechanism of this species.

Dichopus is differentiated from *Grastidium* and *Eriopexis* by the possession of the following features; gradual reduction in leaf size, with a significant apical portion of each stem bearing much-reduced bract-like leaves; large seeds; globular embryo visible in the inflated part of the seed, with an attenuate single-celled suspensor; the stigmatic appendage discussed above; and the flowers lasting more than one day (usually 2-4 days). Our phylogenetic analysis of the group (Clements and Jones in prep.) shows that *Dichopus* is paraphyletic to *Grastidium* and we treat it at subgeneric rank (see Phylogeny section for more details).

Eriopexis was described as a section within the subgenus *Xerobium* by Schlechter (1911-14). Schlechter noted that *Eriopexis* formed a sharply defined group with a striking uniformity of characters, viz. extraordinarily flat stems and an enormously developed column-foot. Our phylogenetic analysis of the group (Clements and Jones in prep.) shows that *Eriopexis* is sister to *Grastidium* and possesses two autapomorphs. We treat it at generic rank (see Phylogeny section for more details).

In the first of a series of papers on taxa in the Dendrobiinae, we recently accepted *Dockrillia* Brieg. as distinct from the rest of *Dendrobium* (Clements and Jones 1996). This paper deals with *Grastidium sensu str.*, *Dichopus* and *Eriopexis*, while the status of



Dendrobium sections *Macrocladium* and *Pleianthe* will be the subject of a separate paper (Clements and Jones in prep). Further research is required to enunciate the relationships of the groups and species within *Grastidium*. Also a number of undescribed species of *Grastidium* are known to the authors and these will be described in a forthcoming paper.

MATERIALS AND METHODS

This treatment is based on a study of living plants, dried herbarium specimens, spirit-preserved specimens stored in BANG mix (65 % ethanol, 5 % glycerol and 30% water), floral dissection cards and 35 mm colour transparencies of flowers and plants. Specimens or photographs on microfiche were examined from the following herbaria: AMES, BM, BO, BRI, CANB, K, L, MEL and W. Herbarium abbreviations follow Holmgren *et al.* (1990). Unless otherwise indicated, all types (or photographs thereof) and collections cited have been seen.

In keeping with the recommendations on types in the International Code of Botanical Nomenclature, when a type has been destroyed and no duplicates are known to exist, a neotype has been designated. This is the case with a number of Schlechter species of orchids collected in New Guinea. One of the main aims of the Schlechter-Lauterbach Commemorative Expedition 1989-1990 was to collect material to replace these missing types (Clements and Ziesing 1990) and neotypes have been selected from amongst these collections. When selecting neotypes we have only used material collected at or near the original collection sites.

Protocorms and seedlings were sampled from propagules raised symbiotically or asymbiotically from seed of known provenance using methods described previously (Clements 1982, Clements *et al.* 1986, Arditti *et al.* 1982, Arditti and Ernst 1993). Whenever possible, a voucher specimen of material used in this research has been deposited at CANB.

Developmental embryology was studied using material fixed and cleared in Amaan's lacto-phenol mounting fluid, or lacto-phenol (Amaan 1896). Preparations were examined either on a Nikon Opiphot-pol microscope with video camera attachment, using the Differential-Interference-Contrast (DIC) [or Nomarski microscopy] optics or

on a Biorad MCR-600 confocal laser scanning system coupled with a Zeiss Axiovert 10 inverted microscope. Images were processed using the Image I software package (Universal Imaging Inc.), and then stored digitally on disc.

TAXONOMY

Grastidium Blume, *Bijdr.* 7: 333 (1825). Type species: *Grastidium salaccense* Blume *vide* Brieger (1981).

Synonyms: *Dendrobium* Sw. sect. *Chrysantha* Rchb.f. in Walp., *Ann. Bot. Sys.* 6: 288 (1861), *nom. illeg., pro parte*. Type species: *non designatus*

Dendrobium Sw. sect. *Eudendrobium* subsect. *Foliosae* Benth. et Hook.f., *Gen. Plant.* 3: 501 (1883), *pro parte*. Type species: *non designatus*

Dendrobium Sw. section *Grastidium* (Blume) J. J. Smith, *Fl. Buitenz.* 6: 348 (1905).

Dendrobium Sw. sect. *Dianthe* Schltr. in K. Schum. et Laut., *Fl. Schutzg. Sudsee, Nachtr.* 150 (1905). Type species: *non designatus*

Dendrobium Sw. sect. *Bambusaefoliae* Ridl., *Mat. Fl. Mal. Pen.* 31 (1907). Type species: *Dendrobium gemellum* auct. *non* Lindl.: Ridl., *D. pensile* Ridl.

Dendrobium Sw. subgen. *Grastidium* (Blume) Kraenzl. sect. *Angustifolia* s. *Bambusacea* Kraenzl. in Engl., *Pflanzenreich Orch.-Mon.-Dendr.* 45: 160, 165 (1910), *pro parte*. Type species: *non designatus*

Dendrobium Sw. subgen. *Xerobium* Schltr. sect. *Grastidium* (Blume) Schltr., *Repert. Spec. Nov. Regni Veg.*, *Beih.* 1: 450 (1912).

DESCRIPTION

Epiphytic, epilithic or rarely terrestrial herbs, sympodial. **Roots** creeping, filiform, wiry, terete, much-branched. **Stems** slender and undifferentiated, round or slightly laterally flattened, cane-like, pseudo-indeterminate or nearly so, simple or branched, often bearing aerial growths. **Leaves** one per node, alternate, distichously arranged; sheathing base tubular, encircling the stem; lamina sessile, thin-textured (rarely fleshy and terete), twisted at the base and aligned in a flat plane more or less level with the stem; apex unequally emarginate. **Flowering** synchronous. **Inflorescence** lateral, bursting through a node and sheathing base, at right angles to the stem, arising at a node opposite a leaf lamina,

subtended by paired, indurate, laterally compressed sheaths, consisting of a short peduncle with geminate apical flowers opening simultaneously and facing inwards towards each other. **Flowers** resupinate, opening widely, white or colourful, ephemeral. **Dorsal sepal** free, similar in shape and size to lateral sepals or smaller. **Lateral sepals** united basally to each other and to the column-foot forming a mentum, equal to or larger than the dorsal sepal. **Petals** free, similar to or smaller than the sepals. **Labellum** free, hinged to the apex of the column-foot; lamina 3-lobed; lateral lobes erect and column-embracing, entire or lobed; mid-lobe porrect or recurved, entire or lobed. **Lamina callus** variable, consisting of thickened central ridges or raised plates, often breaking up distally into irregular calli or excrescences, often with lateral lines radiating onto the lamina. **Column** fused completely; column wings fused to the column, the apical extensions reduced to teeth which flank the anther. **Column-foot** as long as or longer than the column, curved, often with a coloured apical patch or coloured apical excrescences. **Anther** incumbent. **Pollinia** 4, orange, waxy. **Stigma** entire, deeply sunken. **Rostellum** superficial, ventral. **Capsule** lacking ornamentation, dehiscing by slits. **Protocorm** discoid-conical, the primary roots arising from stem nodes. **Fig. 1.**

Grastidium consists of about 200 species and is distributed from Sri Lanka to Tahiti, Taiwan to New Caledonia, with the centre of diversity undoubtedly being New Guinea.

PHYLOGENY

A preliminary phylogenetic analysis of this and related genera (Clements and Jones, in prep.), reveals that *Grastidium* and *Dichopus* Blume together form a monophyletic taxon supported by four synapomorphies. *Eriopexis* (Schltr.) Brieger is sister to and separated from these two taxa by two synapomorphies. *Dendrobium* sect. *Pleianthe* Schltr. is basal to these taxa and separated by three synapomorphic characters, and all of these from *Monanthos* (Schltr.) Brieger and *Herpethophytum* (Schltr.) Brieger, which form a sister group, by five synapomorphic characters. *Grastidium* and *Dichopus* could, however, not be separated with the characters for *Dichopus* being apomorphic for that taxon. Therefore it is here proposed that *Dichopus*

should be treated as a subgenus within *Grastidium*, while *Eriopexis* is by virtue of the possession of two synapomorphic characters not found in *Grastidium*, is treated as a separate genus. The phylogeny of the other sections within *Dendrobium* subgen. *Xerobium*, including the sections *Pleianthe*, *Monanthos* and *Herpethophytum*, is the subject of a separate paper (Clement and Jones, in prep.)

Grastidium is easily separated from *Dendrobium sens. str.* with which it has been included by various authors. Key characters are:-

- 1). laterally flattened stems of pseudo-indeterminate growth;
- 2). synchronous flowering;
- 3). lateral inflorescences emerging from a node opposite a leaf lamina and breaking through its sheath;
- 4). inflorescences emerging with the protection of two indurated, laterally compressed sheathing bracts;
- 5). inflorescence a much reduced, geminate raceme with terminal, inward-facing flowers;
- 6). and, ephemeral flowers lasting from 3 to 8 hours (except in subgen. *Dichopus*).

Grastidium is easily recognised by these characters but like all large genera it exhibits variation, with some species having remarkable adaptations to their environment. Herbarium specimens are easily recognisable as belonging to the genus, even if they are sterile. The presence of two opposing, indurate bracts on thin stems is usually sufficient to identify a specimen as a *Grastidium*.

The colour of the flowers is reasonably constant within species, and as such is a useful character for identification. For all species studied by us the flowers last less than 8 hours, but in rare cases they may remain open for up to 2 days, but are sexually non-functional on the second day. Origin and habit are also useful in identification. Most species tend to have a restricted distribution and in our experience it is the exception rather than the rule for a species of *Grastidium* to be widespread and variable. Our research has shown that many so-called widespread species, especially those from oceanic islands, are instead composites of several narrow endemics, differing in significant characters from the plants of adjacent islands.



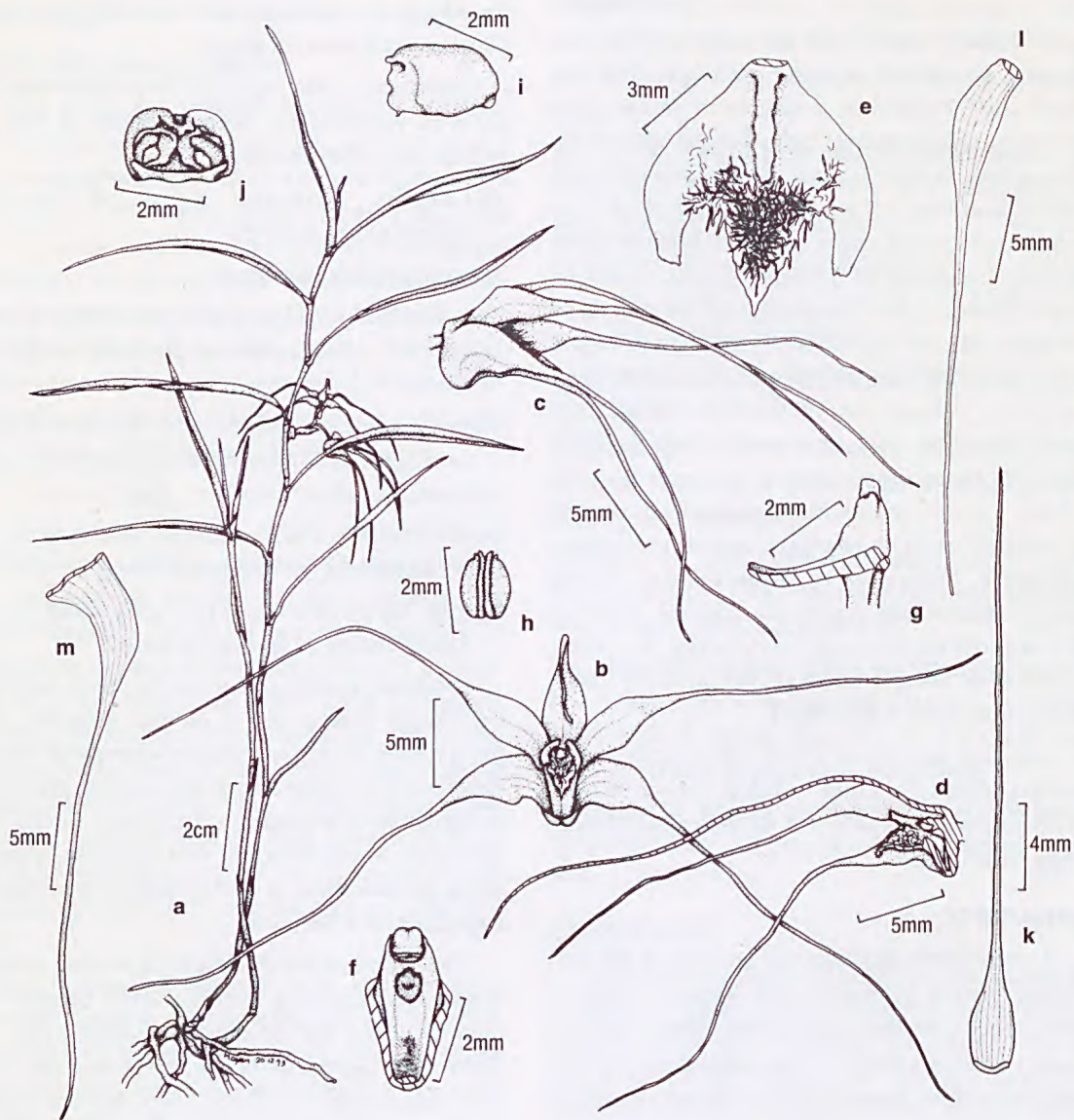


Figure 1. A typical *Grastidium*. a. plant: b. flower from front: c. flower from side: d. longitudinal section through flower: e. labellum, flattened: f. column from front: g. column from side: h. pollinia: i. anther from side: j. anther from back: k. dorsal sepal: l. petal: m. lateral sepal (illustration by Melissa Ogden).

Although not highly regarded for their ornamental appeal, many species of *Grastidium* have very attractive colourful flowers with sweet odours. Plants of most species are generally easy to grow, flower intermittently and the flowers are often produced in profusion. Flowering of cultivated plants can be initiated by exposure to sudden drops in temperature, the flowers developing some 8-12 days after this treatment. In nature similar temperature drops, as experienced during heavy storms, are sufficient to trigger flowering.

KEY TO SUBGENERA

1. Leaves on distal parts of stem reduced and much smaller than basal leaves; stigma with an appendage; flowers lasting 2-3 days *Dichopus*

Leaves uniform or gradually reduced in size; stigma lacking appendage; flowers lasting less than a day *Grastidium*

SUBGENUS GRASTIDIUM

1. *Grastidium acuminatissimum* Blume, Bijdr. 333 (1825); *Dendrobium acuminatissimum* (Blume) Lindl., Gen. Sp. Orch. Pl. 86 (1830); *Callista acuminatissima* (Blume) Kuntze, Rev. Gen. Pl. 2: 654 (1891). Type: Java, Mt Salak, C. Blume 2237 (holo L!; iso BM!).

Synonyms: *Dendrobium caudatum* Teijsm. et Binnend., Natuurk. Tijdschr. Ned.-Indie 24: 315 (1862). Type: cult. Bogor ex Sumatra, J.E. Teijsmann (holo L, not found).

Dendrobium caudatum Teijsm. et Binnend. var. *javanica* Teijsm. et Binnend., Natuurk. Tijdschr. Ned.-Indie 24: 315 (1862). Type: 'in monte Salak', J.E. Teijsmann (holo L, not found).

ILLUSTRATIONS: Smith (1907), t. 265 - as *Dendrobium acuminatissimum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Java, Sumatra (possibly in other islands of Indonesia and perhaps elsewhere in the region, but the exact distribution is unknown because of confusion with other named species with similar floral or vegetative morphology). Grows in clumps as a semi-erect to pendulous epiphyte in rainforest.

NOTES: This species is characterised by white flowers with long spidery tepals. Smith (1905b) treated *Dendrobium caudatum* as a synonym of *Dendrobium acuminatissimum* (= *Grastidium*

acuminatissimum) without comment. We have been unable to locate the type of *Dendrobium caudatum* and therefore cannot confirm Smith's interpretation of its identity. It is difficult to believe that Teijsmann and Binnendijk were not aware of the identity of *G. acuminatissimum*, considering it grows wild in the Bogor Botanic Gardens and elsewhere nearby, including Mt. Salak where the type was collected. They differentiated the Sumatran plants from those found in Java as the variety *javanica* which Smith (1932) treated as a synonym of *D. acuminatissimum*.

Grastidium acuminatissimum has been a botanical dumping ground for a number of species which have white, spidery flowers.

SPECIMENS EXAMINED: Indonesia. Sumatra, Korthals 737a (L 903348 94); Tuin Lilolangit, alt. c. 500 m, 17 Jan. 1921, Larking 8140 (L 922297 2169); Auf Baumen bei Padang Pandjang, alt. c. 750 m, 19 Jan. 1907, Schlechter 15906 (BM, K); Java, 1846, Lobb 178 (BM, K, W); cultivated Bogor No. 49, 1908, Smith (K); Java, Zollinger 3664 (BM, K, W).

2. *Grastidium acutilobum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium acutilobum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 599 (1912) & Fig. Atlas t. 201, f. 756 (1928). Type: Kaiser - Wilhelms-Land: On trees in the forests near the Kaula Base, alt. c. 300 m, Nov. 1907, R. Schlechter 16874 (holo B†; iso AMES!, BO!, G, K!, L!, NSW!).

ILLUSTRATIONS: Schlechter (1928), t.201, f. 756 - as *Dendrobium acutilobum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest.

NOTES: *Grastidium acutilobum* is characterised by prominent falcate, ovate-lanceolate lateral lobes and acuminate mid-lobe of the labellum, short sepals, pointed and keeled on the outside and rose-red flowers, with an orange-yellow keel on the labellum (Schlechter 1911-14).

3. *Grastidium agusanense* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium agusanense* Ames, Sched. Orchid. No. 6.: 79 (1923). Type: Philippines; Mindanao, Cabaddaran (Mt. Ursaneta), Province of Agusan, Aug. 1912, A.D.E. Elmer 13462 (holo AMES!; iso BM!, BO!, K!).



ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Philippines; Mindanao, Agusan and Surigao, growing on trees in rainforest at alt. c. 330 m (Valmayor 1984).

NOTES: Flowers are green (Valmayor 1984).

4. *Grastidium alagense* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium alagensis* Ames, Philipp. J. Sci. 1907, 2: 328 (1907). Type: Philippines: Epiphyte on trees along the Alag River, 2 Dec. 1906, E.D. Merrill 5846 (holo AMES!; iso K!).

ILLUSTRATIONS: Kraenzlin (1910), f. 12 A-D - as *Dendrobium luzonense*.

DISTRIBUTION AND ECOLOGY: Philippines; Mindoro, growing on trees along the Alag River, alt. c. 100 m.

NOTES: Flowers pale straw-yellow with a greenish tinge. Kraenzlin (1910) treated this species as a synonym of *Dendrobium luzonense* Lindl., based on a comparison of the illustration of Lindley's type and Merrill's specimen. The illustrations on Lindley's specimen are very superficial but nevertheless the labellum outline is nothing like that shown by Kraenzlin (1910), f. 12C under the name *D. luzonense*. Kraenzlin's illustration appears to be based on the Merrill collection and accordingly we have cited it above as indicative of that species.

5. *Grastidium aliciae* (Ames et Quisumb.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium aliciae* Ames et Quisumb., Philipp. J. Sci. 1933, 52: 443 (1934). Type: Philippines; Luzon, Benguet Subprov., Mt. St. Tomas, May 1932, E. Quisumbing 84618 (holo AMES!).

ILLUSTRATIONS: Valmayor (1984), p. 147 - as *Dendrobium aliciae*.

DISTRIBUTION AND ECOLOGY: Philippines; Agusan (Butuan), Albay, Cotabato, Davao, Laguna, Leyte, Negros Occidental, Palawan, Polilio, Quezon (Lucban), Samar and Surigao. Epiphyte near swamps, forest and hillsides, from sea level to 900 m (Valmayor 1984).

NOTES: Flowers are small, odourless, white with purple and yellow stripes (Valmayor 1984).

6. *Grastidium alticola* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium alticola* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 595 (1912) & Fig. Atlas t. 199, f. 748 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Bismarck Range, alt. c. 2400 m, Nov. 1908, R. Schlechter 18732 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 199, f. 748 - as *Dendrobium alticola*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Schlechter (1911-14) considered this species to be related to *D. pictum* (= *G. summerhayesianum*) from the Torricelli Ranges. "The flowers are yellowish, red-dotted, the column with a red spot and callus".

SPECIMEN EXAMINED: Papua New Guinea. Madang Province; Simbai area, Mt Sasau, alt. c. 2000 m, 27 Apr. 1990, Clements 7084 (CANB 9013332).

7. *Grastidium angustispathum* (J. J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium angustispathum* J. J. Smith, Nova Guinea 18: 44-45, t. 9, f. 25 (1936). Types: Dutch New Guinea: In the northern part, Mamberamo, Pioneer-bivouac, epiphytical, alt. 10 m, 14 July 1920, H.J. Lam 614 (syn BO!); Same locality, opposite Albatros-bivouac, 100 m, terrestrial on rocky ground under thin coppice, July 1926, W.M. Docteurs van Leeuwen 9567 (syn BO!).

Dendrobium acuminatissimum (Blume) Lindl. var. *mamberamense* J. J. Smith, Nova Guinea 19: 411 (1932). Type: Dutch New Guinea: In the northern part, Mamberamo, Pioneer-bivouac, epiphytical, alt. 10 m, 14 July 1920, H.J. Lam 614 (holo L !; iso BO!).

ILLUSTRATIONS: Smith (1936), t. 9, f. 25 - as *Dendrobium angustispathum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1932) provisionally placed this taxon as a variety of *Dendrobium acuminatissimum*, pending a revision of that species which was never completed. He later described it at species rank. *Grastidium acuminatissimum* is endemic to Java, Sumatra and adjacent islands, however the name has been used for a multitude of species which have spidery white flowers. Smith noted that *Dendrobium*



1. *Grastidium exaltatum* in bud, showing the geminate flowers and inflorescence bracts, Clements 6638



2. *Grastidium alticola*, Clements 7084





3. *Grastidium bailyei*, Jones 4195



4. *Grastidium branderhorstii*, O'Byrne D900



5. *Grastidium brunnescens*, Clements 6674b



6. *Grastidium comaridiorum*, Clements 7965a





7. *Grastidium campbellii*, Clements 5803



8. *Grastidium concroides*, Clements 1682

angustispathum could be distinguished by "Leaves thin, light green, sepals and petals white, lip with spur light salmon-coloured, bordered red in the middle, apex light yellow, column red and white, ovary greenish white, flowers slightly odoriferous".

8. *Grastidium armitiae* (F. M. Bailey) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium armitiae* F.M. Bailey, Queensl. Agric. J. 4 (1): 48 (1899). Type: cult. Brisbane ex 'Near Samarai, New Guinea', Miss Armit (holo BRI, not found).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest.

NOTES: Flowers light-pink except for the lateral lobes of the labellum which are very dark-brown, disk white on each side of a thick raised dark-yellow callus, inner surface of column-foot orange-yellow, anther cap white.

We have been unable to locate the type at Brisbane or any other herbarium and assume it has been lost or destroyed.

9. *Grastidium aromaticum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium aromaticum* J.J. Smith, Meded. Rijks-Herb. (Leiden) No. 23: 10 (1915) & Nova Guinea 12(4): 306-307, t. 111, f. 200 (1916). Type: Dutch New Guinea; Hinterland of Hollandia, on Humboldt Bay, epiphytic in forest on a hill by the sea, alt. c. 100 m, Jan. 1912, K. Gjellerup 967 (holo & iso BO!).

ILLUSTRATIONS: Smith (1916), t. 111, f. 200 - as *Dendrobium aromaticum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya (north coast) and possibly adjacent areas in Papua New Guinea. Epiphytic in littoral rainforest.

NOTES: Smith (1916) notes that *Dendrobium aromaticum* has affinities with *D. coloratum*, *D. sarcodes* and especially *D. longicaule* and according to the collector "the stems reach up to 1 m in length, the leaves are a matt pale green the flowers a creamy-yellow with numerous delicate brown dots and a faintly aromatic odour."

10. *Grastidium asperatum* (Schltr.) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium asperatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 586 (1912) & Fig.

Atlas t. 195, f. 734 (1928). Type: Kaiser-Wilhelms-Land: On trees in the mountain forests on the Waube Creek (Waria District), alt. c. 700 m, May 1909, R. Schlechter 19464 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 195, f. 734 - as *Dendrobium asperatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest at moderate altitude.

NOTES: Allied to *Dendrobium elatum* but a smaller plant with smaller flowers and characterised by the dense warts on the margins of the rough flower-sheaths, and flowers that "are cream-coloured with an orange keel in the labellum and a orange-red spot on the column-foot" (Schlechter 1911-14).

11. *Grastidium axillare* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium axillare* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 605-606 (1912) & Fig. Atlas t. 203, f. 765 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Dec. 1907, R. Schlechter 17052 (holo B†; iso AMES!, BO!, E, G, K!, L!, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 203, f. 765 - as *Dendrobium axillare*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in montane rainforest.

NOTES: Schlechter (1911-14) considered this species allied to *Dendrobium tridentiferum* but having a relatively simple labellum and orange-yellow flowers.

12. *Grastidium baileyi* (F. Muell.) Rauschert, Feddes Repert. 94(7-8): 447 (1987).

Basionym: *Dendrobium baileyi* F. Muell., Fragm. 8: 173-4 (1874); *Callista baileyi* (F. Muell.) Kuntze, Revis. gen. pl. 2: 654 (1891). Type: 'In silvis montium aliorum pone Rockingham's Bay', F. M. Bailey s.n. (holo MEL!).

Synonym: *Dendrobium keffordii* F. M. Bailey, Proc. Roy. Soc. Queensland 1: 2 (1884). Type: 'Queensland, Johnstone River', W.R. Kefford s.n. (holo BRI not found); cult. Bowen Park, 4 Jan. 1887, F. M. Bailey s.n. (neotype BRI!, fide Clements 1989).

ILLUSTRATIONS: Nicholls (1969), t. 424; Dockrill (1994), plate 96 - both as *Dendrobium baileyi*.

DISTRIBUTION AND ECOLOGY: Australia. Queensland; coastal area and adjacent ranges from



Cape York Peninsula south to Eungella. Epiphytic in rainforest.

NOTES: Characterised by the thin, filamentous sepals and petals. The flowers are creamy-yellow with brown spots and markings, the labellum yellow with brown-black lateral margins.

SPECIMENS EXAMINED: Australia. Queensland; Cook District; SFR 755, North Johnstone L.A., 14 Nov. 1977, Dockrill (QRS 17365); cultivated at the Australian National Botanic Gardens (ANBG), 15 Dec. 1995 ex Qco; c. 2 km E of Milla Milla on Palmerston Highway, May 1989, Jones 4165 (CANB 8912965); cultivated ANBG, 16 Dec. 1994 ex Qco; mangrove channel on north side of Harvey Creek, south of Deeral Landing, May 1989, Jones 4195 (CANB 8912998); cultivated, ANBG, 14 Nov. 1996 ex Qco; Gap Creek near Cooktown, Roberts (Jones 13876) (CANB); Mulgrave R., Deeral, 5 July 1945, Sullivan (QRS 44101).

13. *Grastidium bambusifolium* (Par. et Rchb.f.) Brieger in Schltr., *Die Orchideen* 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium bambusifolium* Par. et Rchb.f., *Trans. Linn. Soc.* 30: 149 (1870). Type: Burma, in the neighbourhood of Moulmein, Mar.-June 1868, E.C. Parish 188 (holo W!; iso K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Burma. Epiphytic in rainforest.

NOTES: Similar to *Dendrobium haemoglossum* but differing by the bilobed rather than acute labellum mid-lobe.

14. *Grastidium bambusinum* (Ridl.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium bambusinum* Ridl., *Trans. Linn. Soc., Bot.* 9: 167-68 (1916). Type: Dutch New Guinea: Utakwa River, between Camp III and VIII, 2500 to 4900 ft., Dec. 1912, C. Boden Kloss (holo BM!; iso K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in montane rainforest.

NOTES: Ridley (1916) noted that this species was "Allied to *D. piestocaulon* Schlechter, but with a very different and coriaceous lip, practically four-lobed, with a very deep and wide indentation between the two acuminate points of the middle lobe. The flowers are very thin in texture, and appear to have

been greenish in colour." *Dendrobium piestocaulon* is now considered to be a member of the genus *Monanthos* (Schltr.) Brieger and not a *Grastidium* so the comparison is somewhat misleading.

15. *Grastidium biflorum* (G. Forst.) M. A. Clem. et D.L. Jones, comb. nov.

Basionym: *Epidendrum biflorum* G. Forst., *Fl. Ins. Austr. Prodr.* 60 (1786); *Dendrobium biflorum* (G. Forst.) Sw., *Nova Acta. Reg. Soc. Sci. Upsal.* 6: 84 (1799). Type: Tahiti, G. Forster s.n. (lecto BM!, vide Kores 1991; iso K!).

ILLUSTRATIONS: Kores (1991), fig. 88, bottom RHS - as *Dendrobium biflorum*.

DISTRIBUTION AND ECOLOGY: Tahiti, Samoa, Fiji.

NOTES: Flowers are cream and pinkish, white, creamy-yellow with brown spots, and a creamy-yellow labellum.

SPECIMENS EXAMINED: Tahiti, May 1830, Matthews 151 (K-L); Fiji, Seemann 582 (K).

16. *Grastidium blanche-amesii* (Hawkes et Heller) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium blanche-amesii* Hawkes et Heller, *Lloydia* 20: 119 (1957), nom.; *Dendrobium verruculosum* Ames, *Philipp. J. Sci., Bot.* 1913, 8: 426 (1914), non Schltr. (1912). Type: Philippine Islands, (probably from Luzon), 1909, W.S. Lyon 143 (holo & iso AMES!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Philippines; Luzon Ilocos, Norte, Leyte, Quezon, Rizal and Sorsogon. Epiphyte in mangroves.

NOTES: 'Closely related to *D. ornithoflorum* Ames. From *D. luzonense*, a closely allied species, it is easily separated by the three, elevated, irregularly dentate keels which are conspicuous on the middle lobe and which become confluent opposite the lateral lobes where they form a thickened ridge. The sheathing bases of the leaves in dried specimens are longitudinally nerved with minutely verruculose nerves' (Ames 1914). Flowers greenish yellow.

17. *Grastidium branderhorstii* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983). **Fig. 2.**

Basionym: *Dendrobium branderhorstii* J.J. Smith, *Bull. Dépt. Agric. Néerl.* 39: 8 (1910) & *Nova Guinea* 8(1): 561-62, t. 91D (1911). Types: cultivation in

Hort. Bog. under sub. no. 34B ex Dutch New Guinea: At the upper Digul [Digoel] River, [Aug.-Sept.] 1909, B. Branderhorst 34B (syn BO, L!?) (Lorentz Expedition 1909, Rachmat, living plant in cultivation at Hort. Bog. under sub. no. 171R) (syn BO); on the border of Papua, alt. c. 240 m, on trees in the primary forest, Oct. 1909, von Römer 407 (syn BO!).

Dendrobium angraecifolium Schltr. in K. Schum. et Laut., Fl. Schutzg. Sudsee, Nachtr. 169 (1905); Repert. Spec. Nov. Regni Veg., Beih. 1: 584 (1912) & Fig. Atlas t. 195, f. 732 (1928), non Finet (1903). Types: Kaiser-Wilhelmsland: On trees in the forests near the foot of the Bismarck Range, alt. ca. 200-400 m, Jan. 1902, R. Schlechter 14089 (holo B \dagger); On trees in the forests near the foot of the Bismarck Range, alt. ca. 200-400 m, alt. ca. 200-400 m, Nov. 1905 [1908], R. Schlechter 18665 (para B \dagger ; isopara BO, E, K! L).

ILLUSTRATIONS: Smith (1911), t. 91D - as *Dendrobium branderhorstii*; Schlechter (1928), t. 195, f. 732 - as *Dendrobium angraecifolium*; O'Byrne (1994), p. 351 - as *Dendrobium angraecifolium* (D900).

DISTRIBUTION AND ECOLOGY: Papua New Guinea and Indonesia; Irian Jaya. Epiphyte in lowland or coastal rainforests.

NOTES: The von Römer collection of *Dendrobium branderhorstii* appears to be the only extant type material of this species at Herbarium Bogoriense.

The flowers are pale yellow, with an orange callus on the column-foot (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 14 May 1990 ex Papua New Guinea; Morobe Province, Waria River area near Botopuro, 9 Apr. 1990, Clements 6687 (CANB 9011879); cultivated ANBG, 25 May 1990 ex Papua New Guinea; Madang Province; Wassabamal Logging Purchase, c. 8-9 km W of Bunu (Cape Croisulles), alt. c. 100 m, 31 Mar. 1990, Clements 6346 (CANB 9012729).

18. *Grastidium brunnescens* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium brunnescens* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 601 (1912) & Fig. Atlas t. 202, f. 760 (1928). Type: Kaiser-Wilhelmsland: On trees in the forests of the Maboro Range (Waria District), alt. c. 1100 m, June 1909, R. Schlechter 19890 (holo B \dagger); cultivated ANBG, 24 Mar.

1994 ex Papua New Guinea; Waria River area near Botopuro, 9 Apr. 1990, Clements 6674B (CANB) (neotype CANB, here designated).

ILLUSTRATIONS: Schlechter (1928), t. 202, f. 760 - as *Dendrobium brunnescens*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in primary rainforest.

NOTES: Schlechter records the flower colour as "brownish, labellum with red-brown lateral lobes; column white, its foot with an orange-yellow spot on the tip".

19. *Grastidium camaridiorum* (Rchb.f.) Rauschert, Feddes Rep. 94(7-8): 448 (1983).

Basionym: *Dendrobium camaridiorum* Rchb.f., Linnaea 41: 89 (1877). Type: Nova Caledonia, Balade, 1855-60, Vieillard 1332 (holo W!; iso P!).

ILLUSTRATIONS: Hallé (1977), pl. 39-40; Bégaud et al. (1995), p. 61 - both as *Dendrobium camaridiorum*.

DISTRIBUTION AND ECOLOGY: New Caledonia. Epiphyte in rainforests throughout the main island.

NOTES: Hallé has a note on the specimen at W as follows: "Le destin de Reichenbach.f. a été calqué sur matériel déposé à Paris et que je considère comme l'holotype Vieillard 1332 nec 1292 ! Epiphyte; Balade; 1855-60 ex institut Botanique de Caen. *Dendrobium camaridiorum* Rchb.f. N. Hallé 22.6.1977". The specimen consists of a small portion of the stem and some leaves, and a single flower, with the labellum separated. From the drawing accompanying the specimen, and the small size of the flower, it would appear that Reichenbach only had at his disposal an immature flower. Despite Hallé's stated opinion, it is clear this material was used for the original description and therefore unfortunately should be considered the holotype, the reminder of the collection from which this specimen was taken is therefore the isotype.

Flowers are white, sometimes pink towards the filamentous ends of the sepals and petals, labellum with an orange central callus, and orange in the basal half of the column-foot.

SPECIMENS EXAMINED: cultivated ANBG 14 Dec. 1994 ex New Caledonia; Mt. Koghis, 7 Dec. 1989, Clements 5679 (CANB 8916321); cultivated ANBG, 13 Nov. 1995 ex New Caledonia; Giant Kauri tree forests in the Parc territorial de la Rivière Bleue, 21



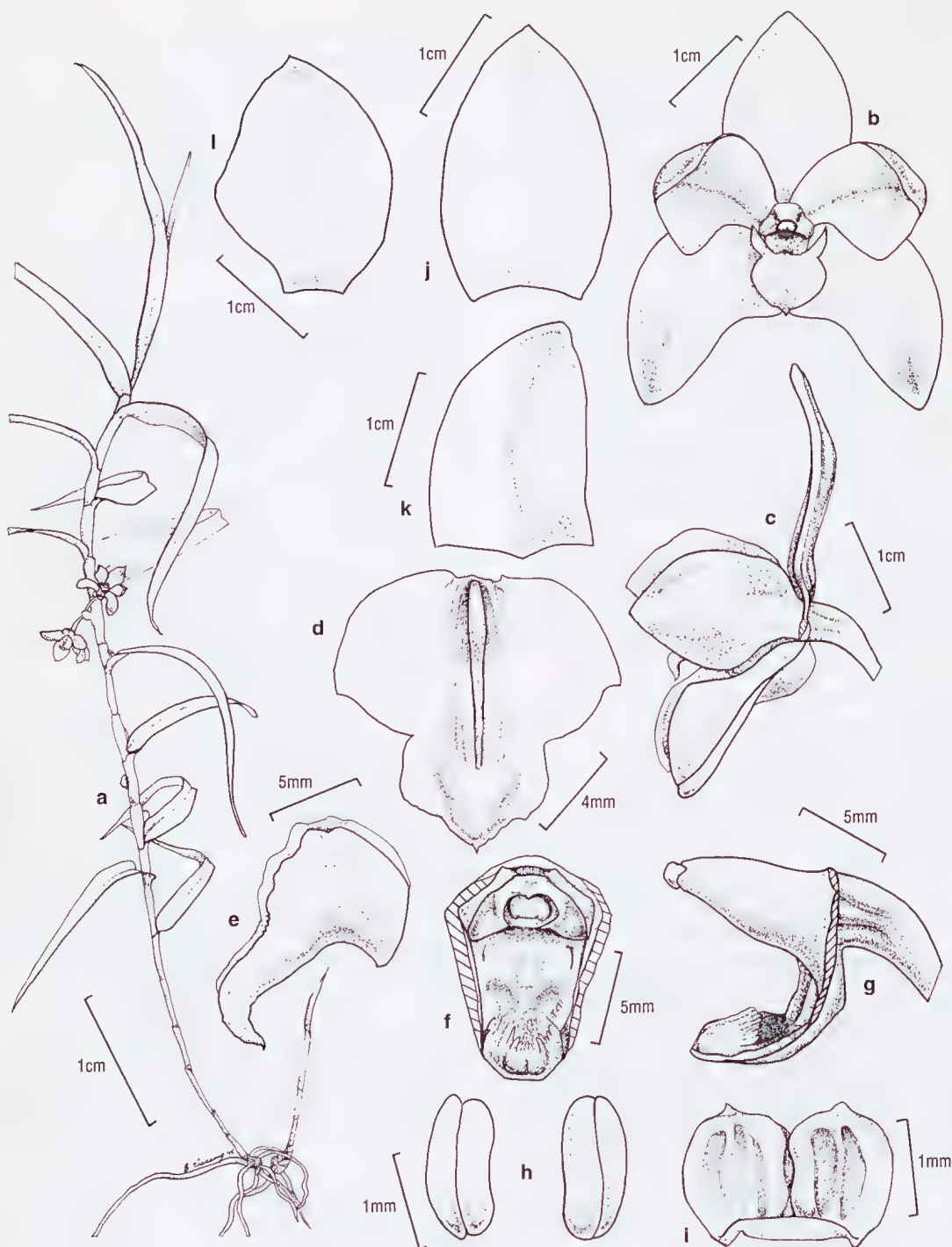


Figure 2. *Grastidium branderhorstii*, Wassabamal, N of Madang, Papua New Guinea, Clements 6346: a. plant: b. flower from front: c. flower from side: d. flattened labellum, from above: e. labellum from side: f. column from front: g. column from side: h. pollinia: i. anther from back: j. dorsal sepal: k. lateral sepal: l. petal (illustration by Elisa Crossing).

Aug. 1992, Clements 7848 (CANB 9212983); cultivated ANBG, 14 Dec. 1994, New Caledonia; Upper reaches of the Quinne valley, 26 Aug. 1992, Clements 7965A (CANB 9213401); cultivated ANBG 14 Dec. 1994 ex New Caledonia; Mt. Koghis, alt. c. 400 m, 6 Nov. 1992, Ziesing 27 (CANB 9217696).

20. *Grastidium campbellii* (P. J. Cribb et B. Lewis) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium campbellii* P. J. Cribb et B. A. Lewis in B. A. Lewis and P. J. Cribb, Orch. Sol. Isl. Boug. 166, f. 38 (1991). Type: Solomon Islands, Rendova, NW side, Lever Logging concession, Kenelo, Adrain Wickham's land, alt. c. 50 m, 5 Nov. 1984, P. J. Cribb & J. Campbell 5145 (holo K!).

ILLUSTRATIONS: Lewis and Cribb (1991), f. 38 - as *Dendrobium campbellii*.

DISTRIBUTION AND ECOLOGY: Solomon Islands. Epiphytic in rainforest. "Plant to 2 m long, pendent, Flowers in pairs, yellow-green with a white mentum".

NOTES: Cribb and Lewis described this species from material with immature flowers, where the colour was given as "yellow-green with a white mentum" but in our material they are cream and pink, the labellum lateral lobes darker pink to red.

SPECIMENS EXAMINED: cultivated ANBG, 16 Mar. 1994 ex Solomon Islands, 1984, Metcalfe (Clements 5803) (RBG 831546 & CANB 9013584).

21. *Grastidium cancroides* (T.E. Hunt) Rauschert, Feddes Rept. 94(7-8): 448 (1987).

Basionym: *Dendrobium cancroides* T.E. Hunt, North Queensland Naturalist 14(83): 30-31, f. (1947). Type: Bellenden Ker Range, Oct. 1946, J.H. Wilkie s.n. (holo BRI!).

ILLUSTRATIONS: Dockrill (1969), p. 497; Dockrill (1994), p. 695 - both as *Dendrobium cancroides*.

DISTRIBUTION AND ECOLOGY: Australia; Queensland, Cape York Peninsula where it inhabits dense wet rainforests along streams, often overhanging water.

SPECIMENS EXAMINED: cultivated ANBG, 7 Mar. 1996 ex Australia; Queensland; Cook District; Mossman, 18 July 1979, Clements 1682 (CANB 7906989); cultivated ANBG 15 Dec. 1995 ex Australia; Queensland; Cook District; Mossman Gorge National Park, 25 May 1989, Jones 4300 (CANB 8913104); Australia; Queensland Cook

District; Mountains near Mossman, Jan. 1933, Rosenstrom (BRI 440571); .

22. *Grastidium carnicarinum* (Kores) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium carnicarinum* Kores, Allertonia 5(1): 92-93 (1989). Type: Fiji; Viti Levu; Mba Province; at the Naval filling area, south of Nandarivatu, 19 Sep. 1966, E. McLoughlin s.n. (holo K, spirit collection number 20209).

ILLUSTRATIONS: Kores (1991), fig. 57 A-I - as *Dendrobium carnicarinum*.

DISTRIBUTION AND ECOLOGY: Fiji; "found growing as an epiphyte 6-9 m above the ground in rainforest at an altitude of 750-900 m" (Kores 1991).

NOTES: Kores (1989) gives a detailed comparison between *Dendrobium carnicarinum* and *D. juniperinum* Schltr. and states that "it is readily distinguished from the other known species of the section in Fiji by its diminutive stature, the small, rigidly coriaceous leaf blades, the truncate upper margins of the leaf sheaths, and the small flowers". The flowers are yellow or white.

23. *Grastidium carolinense* (Schltr.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium carolinense* Schltr., Bot. Jahrb. 56: 472-73 (1921). Types: Caroline Island: On cultivated land similar to mixed forest near Nampomal, on Ponape, alt. c. 20-60 m, Dec. 1913, C. Ledermann 13145 (syn B†); l.c., 13531 (syn B†; isosyn BISH!, K!); in low scrub forest, near Patapat, on Ponape, alt. c. 300-600 m, Nov. 1913, C. Ledermann 13353 (syn B†); l.c., C. Ledermann 13208a (syn B†; isosyn K!); l.c., C. Ledermann 13462 (syn K!); l.c., C. Ledermann 13927a (syn B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Ponape. Epiphyte on the edge of rainforest.

NOTES: "A most characteristic species of the section *Grastidium*, where it is best placed in the affinity of *Dendrobium vernicosum* Schltr. Flowers whitish to reddish-white, with a wine-red to dark-red labellum" (Schlechter 1921).

24. *Grastidium cathcartii* (Hook.f.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium cathcartii* Hook.f., Fl. India 5: 727 (1890) & Icon. pl., t. 2022 (1890). Type:



Sikkim Himalaya, [Nov. 1869], (Ic. Cathcart and Ic. Hort. Bot. Calcutt.) (syn, icon K!).

ILLUSTRATIONS: Hooker (1890), t. 2022; King and Pantling (1898), 8: t. 57 - both as *Dendrobium cathcartii*.

DISTRIBUTION AND ECOLOGY: India, Sikkim. where collected "In tropical valleys ascending to 2,500 feet" (King and Pantling 1898).

NOTES: "A very distinct species with golden flowers, three times as large as *D. bambusaefolium* according to the drawings." (Hooker 1890).

SPECIMENS EXAMINED: "Herb. Hort. Bot. Calcuttensis, Pantling's Orchids of the Sikkim Himalaya Tropical valleys April to Sept. 1891, Pantling 114" (HBG, K, W).

25. *Grastidium cheesmaniae* (Guillaumin) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium cheesmaniae* Guillaumin, Bull. Soc. Bot. France 103: 280 (1956). Type: New Hebrides, Aneityum, Pentes Cotières, Jan. 1955, L.E. Cheesman A22 (holo BM!).

[*Dendrobium involutum* auct. non Lindl.: B.A. Lewis et P.J. Cribb, Orchids Vanuatu 120 (1989)].

[*Dendrobium dactylodes* auct. non Rchb.f.: Kores, Allertonia 5(1): 93-95 (1989)].

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Vanuatu; Anatom where it inhabits the coastal slopes of the ranges.

NOTES: Flowers orange. Lewis and Cribb (1989), having studied the type, reduced this species as a synonym of *Dendrobium involutum*, from Tahiti. Kores (1989, 1991) by comparison, reduced this species to a synonym of *D. dactylodes* after having studied the types of four species, viz. *D. dactylodes*, *D. vaupelianum*, *D. everardii* and *D. cheesmaniae*, confidently stating that the differences were inconsequential and all specimens were representative of a single species. We disagree with both these interpretations, and after studying the relevant types, we consider *G. cheesmaniae* a distinct species.

26. *Grastidium clausum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium clausum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 607-08 (1912) & Fig. Atlas . t. 204, f. 769 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the

Finisterre Range, alt. c. 1200 m, Sep. 1908, R. Schlechter 18168 (holo B†; iso AMES!, BO! E, G, K!, L!, NSW!).

ILLUSTRATIONS: Schlechter (1928), t. 204, f. 769 - as *Dendrobium clausum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: Schlechter (1911-14) records that the flowers are nearly always cleistogamous with no apparent deviation in morphology. The flowers are pale yellow, the labellum white towards the front, the column-foot with an orange-yellow spot.

27. *Grastidium clavuligerum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium clavuligerum* J.J. Smith, Bot. Jahrb. 66: 192-93 (1934). Type: Dutch New Guinea: [Ned. Noord.] without location details, June-Aug. 1928, E. Mayr 525 (holo L!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in rainforest.

NOTES: "Amongst the relatives of *D. acuminatissimum* Lindl., this species is characterised in that the lateral lobes of the lip do not extend all the way forward, and that the middle lobe is covered with long clavate hairs" (Smith 1934). Flower colour is not given but presumably it is white like that of *D. acuminatissimum*.

28. *Grastidium collinum* (J.J. Smith) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium collinum* J.J. Smith, Bull. Dépt. Agric. Néerl. 39: 8 (1910); *Dendrobium planum* J.J. Smith var. *collinum* (J.J. Smith) J.J. Smith, Nova Guinea 8: 556-57, t. 90B (1913). Type: Dutch New Guinea: At the Noord River, on trees on the plain, Oct. 1909, von Römer 601 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1913), t. 90B - as *Dendrobium planum* var. *collinum*; Schlechter (1928), 194, f. 730 - as *Dendrobium collinum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea where it inhabits areas of primary rainforest.

NOTES: Schlechter (1911-14), having studied material from Java and Papua New Guinea, was in no doubt that *D. planum* and *D. collinum* should be treated as distinct species. Comber (1990) states

that *D. planum* only inhabits areas in western Java and Sumatra whereas, *G. collinum* is only known from the forests of Irian Jaya and Papua New Guinea. The flowers are yellow, red towards the tepal apices, the labellum with light red markings on the margins of the side-lobes and darker red margins of the mid-lobe, and column yellow with red on margins of the stigmatic cavity.

SPECIMENS EXAMINED: cultivated ANBG, 14 Dec. 1993 ex Papua New Guinea; Morobe Province; hills behind Garassa village, 6 Apr. 1990, Clements 6390c (CANB); Papua New Guinea; Morobe Province; hills behind Garassa village, 6 Apr. 1990, Clements 6430 (CANB 9012888); Kaiser-Wilhelms-Land; on trees in the forests of the Finisterre Range, alt. c. 600 m, Jan. 1909, Schlechter 19186 (BM, NSW).

29. *Grastidium coloratum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium coloratum* J.J. Smith, Repert. Spec. Nov. Regni Veg. 12: 113 (1913) & Nova Guinea 12(4): 306, t. 111, f. 199 (1916). Type: Dutch New Guinea; On Mt. Goliath, rare, isolated on a smooth tree trunk, alt. c. 150 m, Apr. 1911, A. C. de Kock 183 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1916) t. 111, f. 199 - as *Dendrobium coloratum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in lowland rainforest.

NOTES: "The flowers, according to A.C. de Kock, are crimson-red" (Smith 1913).

30. *Grastidium correllianum* (Hawkes et Heller) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium correllianum* Hawkes et Heller, Lloydia 20(1-4): 119 (1957), nom; *Dendrobium tricolor* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 187 (1910), nom. illeg., non J.J. Smith (1906). Type: Papua New Guinea; Milne Bay, Mountains near Mita, alt. c. 2-2500 ft., Feb. 1895, W. Micholitz s.n. (holo HBG!; iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in mountain forests.

Notes: The flowers are white, the sepals and petals much twisted about, the centre of labellum is yellow and the sides and side lobes brown violet.

31. *Grastidium crassiflorum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium crassiflorum* J.J. Smith, Bull. Dépt. Agric. Néerl. 55: 4 (1911) & Nova Guinea 8(1): 560-61, t. 91C (1911). Type: cult. Hort. Bog. under number 289B ex Dutch New Guinea: At the upper Eilanden River, [Jan.] 1910, B. Branderhorst 289B (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1911), t. 91C - as *Dendrobium crassiflorum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in rainforest.

NOTES: Smith (1911) records that *Dendrobium crassiflorum* "is closely related to *D. longicaule* J.J. Smith, but differs in the wider sepals and petals, larger lateral lobes of the lip and the absence of the hairy callus on the middle lobe". Flowers are pale yellow spotted with red, the labellum yellow, white at the base and dark purple markings on the verrucose side-lobes, dark purple markings on the margins on side and mid-lobes, the central callus orange near the base and yellow nearest the apex and violet on the column-foot.

32. *Grastidium crassifolium* (Schltr.) Rauschert, Feddes Repert. 94(7-8): 449 (1983).

Basionym: *Dendrobium crassifolium* Schltr., Bot. Jahrb. 39: 72 (1906). Type: New Caledonia; Northern District, On trees in the mountain forest, not far from Ou-Hinna, alt. c. 900m, Jan. 1903, R. Schlechter 15603 (holo B†; iso BM!, K!, P!).

ILLUSTRATIONS: Hallé (1977), t. 41-42; Bégaud et al (1995), p. 67 - both as *Dendrobium crassifolium*.

DISTRIBUTION AND ECOLOGY: New Caledonia. Epiphytic along streams in patches of rainforest throughout the main island.

NOTES: Flowers yellow with a lighter creamy-yellow labellum and darker callus.

SPECIMENS EXAMINED: cultivated ANBG, 30 Nov. 1992 ex New Caledonia; Giant Kauri tree forests, Parc territorial de la Rivière Bleue, alt. c. 100 m, 21 Aug. 1992, Clements 7859 (CANB 9212974); cultivated ANBG, 22 Dec. 1992 ex New Caledonia, 15 Nov. 1992, Villegente (Ziesing 269) (CANB 9217938).

33. *Grastidium cucullitepalum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium cucullitepalum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 10: 145-46 (1928). Type: cult. 8 Apr. 1918, Komasi ex Ambon:



Kampong Koeda Mati, alt. 0-20 m, L. Rutten 1112 (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Ambon.

NOTES: Smith (1928) described the species as "Very near *D. aromaticum* J.J. S. from New Guinea but with longer stems, smaller, less warty flowers, with the petals narrower towards the base, relatively longer side-lobes and a smaller mid-lobe, whereas also the stigma is different." Described from herbarium specimens and faded flowers preserved in alcohol but with "flowers yellow, lip black".

34. *Grastidium cyanopterum* (Kraenzl.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium cyanopterum* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 170-71 (1910). Type: 'Papuanische Provinz: Neu-Guinea. Bartle Bay', 1895, Rev. Copeland King s.n. (holo HBG!).

Dendrobium species D525 O'Byrne, Lowland Orch. Papua New Guinea 344-45 (1994).

ILLUSTRATIONS: O'Byrne (1994), p. 345 - as *Dendrobium* species D525.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest.

NOTES: Described as being similar in habit to *G. biflorum* and having pale yellow flowers with a darker yellow labellum with bluish lateral lobes (Kraenzlin 1910).

35. *Grastidium cyclolobum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium cyclolobum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 608 (1912) & Fig. Atlas t. 204, f. 770 (1928). Type: Kaiser-Wilhelms-Land: On trees in the mountain forests on the upper Djamu [River], alt. c. 500 m, Apr. 1908, R. Schlechter 17551 (holo B†; iso G, L!).

ILLUSTRATIONS: Schlechter (1928), t. 204, f. 770 - as *Dendrobium cyclolobum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest at moderate altitude.

NOTES: Schlechter (1911-14) compared this species with *Dendrobium clausum*, differing in the more falcate, blunt, elongate lateral lobes and the margins on the lower half of the labellum are distinctly serrate. The flowers are creamy yellow, the column-foot violet with an orange-red spot.

36. *Grastidium cyrtosepalum* (Schltr.) Rauschert, Feddes Repert. 94 (7-8): 448 (1983).

Basionym: *Dendrobium cyrtosepalum* Schltr. in K. Schum. et Laut., Fl. Schutzg. Sudsee, Nachtr. 169 (1905); Repert. Spec. Nov. Regni Veg., Beih. 1: 597 (1912) & Fig. Atlas, t. 200, f. 753 (1928). Type: Neu-Mecklenburg: On trees at the beach between Malelum and Loasere, alt. c. 20 m, June 1902, R. Schlechter 14621 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 200, f. 753 - as *Dendrobium cyrtosepalum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; New Ireland. Epiphytic on trees along the shoreline.

NOTES: Lewis and Cribb (1991) interpreted this species as occurring in the Solomon Island and Bougainville, but the plant illustrated by them does not match that described and illustrated by Schlechter. "The flowers are white, the labellum yellow with orange-red crest" (Schlechter 1911-14).

37. *Grastidium dactylodes* (Rchb.f.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium dactylodes* Rchb.f., J. Bot. 15: 132 (1877). Type: Samoa, S.J. Whitmee 46 (holo W!; iso AMES!, K!).

Dendrobium involutum sensu Kraenzl., Bot. Jahrb. Syst. 25: 603 (1898), pro parte, non Lindl. (1859).

Dendrobium vaupelianum Kraenzl., Not. Bot. Gart. Berlin 5: 109 (1909) & in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 170-71 (1910); *Grastidium vaupelianum* (Kraenzl.) Rauschert, Feddes Rep. 94 (7-8): 453 (1983). Type: Melanesische Provinz; Samoa; Sawai, Matante, 4 Feb. 1906, F. Vaupel 286 (holo B†, iso AMES!, BISH!, K, W).

Dendrobium whitmeei Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 189 (1910). Types: Samoa Island, ohne Standort, Whitmee s.n. (syn B†; isosyn W!); Apia, niedrig im Gebirge, Bette 227 (syn B†).

ILLUSTRATIONS: Cribb & Whistler (1996), t. 15D - as *Dendrobium dactylodes*.

DISTRIBUTION AND ECOLOGY: Samoa.

NOTES: Kores (1989, 1991) misquotes the date on the Vaupel 286 collection as "collected Jan. 5 or 6, 1905" and not that listed above which is what is on the actual herbarium specimen.

Dendrobium whitmeei was reduced to synonym of *G. dactyloides* by Cribb and Whistler (1996) based on comparison of the original descriptions. We accept this interpretation pending discovery and study of the types, if still extant. We do not agree however, with their interpretation of the other listed synonyms, viz. *D. everardii* and *D. cheesmaniae* (see these entries). Flowers white to pale creamy white.

Kraenzlin (1910) cites Reinecke 218, 232 and 394, all from Samoa, as referable to *Dendrobium involutum*. Only one of these collections Reinecke 394 appears to be still extant and it is a mixed collection comprising a *Grastidium* and an *Appendicula*.

SPECIMENS EXAMINED: Samoa. Upolu, 12 May 1905, Rechinger 494 (W); loc. cit., 26 June 1905, Rechinger 1323 (W).

38. *Grastidium debile* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium debile* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 580-81 (1912) & Fig. Atlas t. 193, f. 725 (1928). Types: Kaiser-Wilhelms-Land: On tall trees in the forests of the Kani Range, alt. c. 1100 m, Sep. 1908, R. Schlechter 18264 (syn B⁺); on trees in the forests of the Finisterre Range, alt. c. 1200 m, Jan. 1909, R. Schlechter 19160 (syn B⁺).

ILLUSTRATIONS: Schlechter (1928), t. 193, f. 725 - as *Dendrobium debile*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in montane rainforest.

Notes: This species is "distinguished from all others by the snake-like, lax habit. The flowers are pale yellow, the labellum whitish with a dark red margin" (Schlechter 1911-14).

39. *Grastidium densifolium* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium densifolium* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 596-971 (1912) & Fig. Atlas t. 200, f. 751 (1928). Type: Kaiser-Wilhelms-Land: On trees in the coastal forests at the mouth of the Waria [River], alt. c. 20 m, July 1909, R. Schlechter 19955 (holo B⁺).

ILLUSTRATIONS: Schlechter (1928), t. 200, f. 751 - as *Dendrobium densifolium*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in lowland rainforest.

NOTES: Schlechter noted the similarity of this species with that illustrated as *Dendrobium pruinoseum* by Smith (1909), (from a plant collected in Dutch New Guinea, in the area between Geelvink Bay and MacCluer Gulf) but maintained them as separate, allied species, with similar habit but a different labellum. The flowers in *G. densifolium* are white-yellow, with a sulphur-yellow labellum, which has brown markings and orange-red crest, and the column whitish with an orange-red spot on the apex of the column-foot.

40. *Grastidium dionaeoides* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium dionaeoides* J.J. Smith, Meded. Rijks-Herb. (Leiden) No. 23: 9 (1915) & Nova Guinea 12(4): 304-305, t. 111, f. 198 (1916). Type: Dutch New Guinea: South coast of Geelvink Bay, Jabi Range near Wape, epiphytic in forest, June 1913, R. F. Janowsky 406 (holo BO!; iso L!).

ILLUSTRATIONS: Smith (1916), t. 111, f. 198 - as *Dendrobium dionaeoides*; O'Byrne (1994), p. 349, t. 16 lower RHS, D915 - as *Dendrobium* aff. *angustispalum*.

DISTRIBUTION AND ECOLOGY: Indonesia: Irian Jaya. Epiphytic or terrestrial in rainforest.

NOTES: This species is allied to *Dendrobium acuminatissimum*, differing in the soft bristles on the inside of the lateral lobes of the labellum, and shape of the column-foot. The collector described the flower colour as "corolla red, tip yellow, lip white" and from the spirit-preserved material Smith records them as "sepals and petals violet at the base; lip with a black-violet margin at the base; column black-violet below the stigma; auricles with a delicate black-violet margin above; the column-foot with a black-violet transverse band at the middle" (Smith 1916).

SPECIMENS EXAMINED: Papua New Guinea. Madang Prov.; Teptep, on ridge above the village, alt. c. 2200 m, 22 Mar. 1990, Clements 6166 (CANB 9010158).

41. *Grastidium discerptum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium discerptum* J.J. Smith, Bull. Dépt. Agric. Néerl. 39: 9 (1910); Nova Guinea 8(1): 555, t. 89B (1911). Type: Dutch New Guinea; At the Noord River, on trees of the plain, Oct. 1909, von Römer 570 (holo in alcohol BO!).



ILLUSTRATIONS: Smith (1911), t. 89B - as *Dendrobium discerptum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in rainforest.

Notes: Allied to *Dendrobium multistriatum* J.J. Smith. Flowers white and brown striped (Smith 1911).

42. *Grastidium djamuense* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium djamuense* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 594-95 (1912) & Fig. Atlas t.199, f. 748 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests on the upper Djamu [River], alt. c. 350 m, Nov. 1907, R. Schlechter 16882 (holo B†; iso AMES!, BO, E, G, K, L, MO, NSW!, S).

ILLUSTRATIONS: Schlechter (1928), t.199, f. 748 - as *Dendrobium djamuense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest.

NOTES: This species is very similar to *Dendrobium heteroglossum* Schltr. but differs in its undivided lip and absence of papillae on the column-foot. The flowers are red-brown, the labellum is white in the middle (Schlechter 1911-14).

43. *Grastidium dulce* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium dulce* J.J. Smith, Nova Guinea 8: 71-72, t. 24, f. 77 (1909). Type: cult. Bogor, 1908 ex "Dutch New Guinea: Without specific locality details" (holo BO!; iso K!).

ILLUSTRATIONS: Smith (1909), t. 24, f. 77 - as *Dendrobium dulce*.

DISTRIBUTION AND ECOLOGY: Irian Jaya and Papua New Guinea. Epiphytic, growing as large clumps in lowland rainforest. This species also colonises street trees *en masse*.

NOTES: Flowers creamy white with filiform segments, labellum with purple spotting on the side-lobes and a lacerated labellum mid-lobe.

SPECIMENS EXAMINED: cultivated Australian National Botanic Gardens ex Papua New Guinea, 1975, Millar s.n. (CANB 770899).

44. *Grastidium elatum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium elatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 585-86 (1912) & Fig.

Atlas t. 195, f. 733 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 800 m, Sep. 1909, R. Schlechter 20152 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 195, f. 733 - as *Dendrobium elatum*.

DISTRIBUTION AND ECOLOGY: Northern Papua New Guinea and possibly Irian Jaya. Epiphytic in rainforest.

NOTES: A robust species allied to *Dendrobium grossum* Schltr. but distinguished by the closely verrucose inflorescence bracts. The flowers are golden yellow, the labellum with an orange-yellow crest, the column with an orange-yellow spot at the apex (Schlechter 1911-14).

45. *Grastidium emarginatum* (J.W. Moore) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium emarginatum* J.W. Moore, Bull. Bish. Mus. (102): 24 (1933). Type: [French Polynesia]; Raiatea; Avera Valley, on branches of trees, alt. 250 m., 11 Jan. 1927, J.W. Moore 522 (holo BISH!; iso BISH!, NSW!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Raiatea (endemic?).

NOTES: The description of this species is similar to that of *G. involutum* from Tahiti, however without the benefit of examining freshly collected material of *G. emarginatum*, from Raiatea, the relationships of this species remain speculative. Flowers yellow, fragrant according to Moore (1933).

46. *Grastidium erectopatens* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium erectopatens* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 2) 2: 10 (1911); Nova Guinea 12(1): 52-53, t. 15, f. 41 (1913). Type: Dutch New Guinea: On the north coast, 1910, K. Gjellerup s.n. (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1913), t. 15, f. 41 - as *Dendrobium erectopatens*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphytic in rainforest.

NOTES: This species is allied to *Dendrobium igneum* J.J. Smith differing "in the somewhat pointed, not appreciably spreading leaves, hence different habit; in smaller flowers, very short lateral lobes and the

middle lobe retrorse at the apex" (Smith 1913). The flowers are described by Smith (1913) as yellowish white, the labellum a deeper yellow with an intense yellow callus, the base pale violet, the column base brownish, and anther yellow.

47. *Grastidium erectum* (Schltr.) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium erectum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 582-83 (1912) & Fig. Atlas t. 194, f. 728 (1928). Type: Kaiser-Wilhelms-Land: On trees in the mountain forests on the upper Waube Creek (Waria District), alt. c. 900 m, May 1909, R. Schlechter 19450 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 194, f. 728 - as *Dendrobium erectum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in rainforest at moderate altitude.

NOTES: This species is allied to *Dendrobium quinquedentatum* J.J. Smith. The flowers are whitish, red-spotted on the outside and yellowish inside (Schlechter 1911-14).

48. *Grastidium erubescens* (Schltr.) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium erubescens* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 617 (1912) & Fig. Atlas t. 208, f. 784 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Bismarck Range, alt. c. 2000 m, Nov. 1908, R. Schlechter 18733 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 208, f. 784 - as *Dendrobium erubescens*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea, growing on trees in montane rainforest at high altitude.

NOTES: This is one of a small group of species, *G. kenejianum*, *G. setosum* and *G. triangulum* that in habit, have the appearance of *Monanthos* (Schltr.) Brieger, with leathery erect, blunt, narrow leaves and flowers in which the labellum is triangular, the mid-lobe being shorter than the side lobes. They are however, typical *Grastidium* in all other respects. The flowers are reddish.

49. *Grastidium everardii* (Rolfe) M.A. Clem. et D.L. Jones, comb. nov. Fig 3.

Basionym: *Dendrobium everardii* Rolfe, Kew Bull 1921: 55 (1921). Types: Fiji: Nandrua, 5 Dec.

1906, E. im Thum 316 (syn K!); Nandarivatu, 7 Dec. 1906, E. im Thum 326 (syn K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Fiji. Epiphytic in lowland rainforest.

NOTES: Kores (1989, 1991) reduced this species to a synonym of *G. dactylodes* on the basis of the variation in the size of floral segments between islands and those taken at various altitudes in Samoa and Fiji. His interpretation was followed without comment by Cribb and Whistler (1996) in their treatment of the Orchids of Samoa. At the Australian National Botanic Gardens, Canberra there are three collections of plants matching the description of *G. everardii*, particularly in regard to the measurements of the floral segments and shape of the labellum. These were all collected from the main island of Fiji.

Cribb and Whistler (1996) suggested that the relationship between *Dendrobium dactylodes* and *D. involutum* needs further investigation. We agree, but suggest that unless it is based on a study of living plants, collected throughout the range of these species, the relationships between them will be difficult to clarify. The areas in question, Fiji and Tahiti, are over 3000 km apart, with Samoa closer and to the north of Fiji.

In the plants at the ANBG, the flowers are pale creamy-yellow.

SPECIMENS EXAMINED: cultivated ANBG, 16 Mar. 1994 ex Fiji, 29 Jan. 1990, Spence (Clements 5807) (CANB).

50. *Grastidium exaltatum* (Schltr.) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium exaltatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 604-5 (1912) & Fig. Atlas t. 203, f. 765 (1928). Type: Kaiser-Wilhelms-Land:

On trees in the forests of the Kani Range, alt. c. 1000 m, Jan. 1908, R. Schlechter 17260 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 203, f. 765 - as *Dendrobium exaltatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in lowland rainforest and trees overhanging rivers.

NOTES: In habit this species is robust, erect and Vanda-like. "The flowers are cream-coloured, the



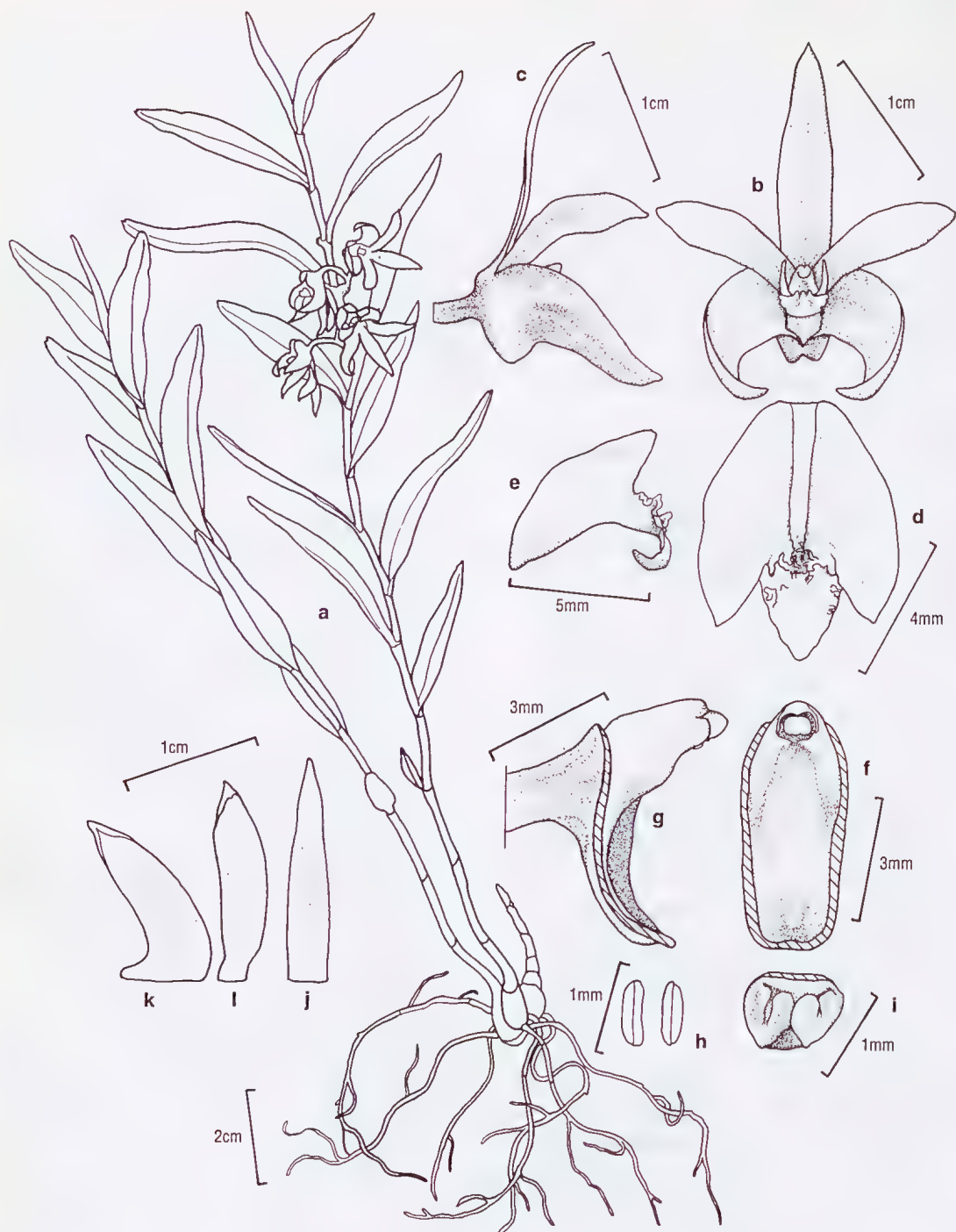


Figure 3. *Grastidium everardii*, cultivated ex Fiji, Clements 5807: **a.** plant: **b.** flower from front: **c.** flower from side: **d.** flattened labellum, from above: **e.** labellum from side: **f.** column from front: **g.** column from side: **h.** pollinia: **i.** anther from back: **j.** dorsal sepal: **k.** lateral sepal: **l.** petal (illustration by Elisa Crossing).

lateral lobes of the labellum dark violet, the column violet in front with a yellow spot at the base" (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 4 Nov. 1996 ex Papua New Guinea; Morobe Province; Botopuro village, 9 Apr. 1990, Clements 6638, Ziesing, Benzing, Dauncey, Kairo & Obedi (CANB 9008279); cultivated Lae Botanic Gardens, 27 Feb. 1996, Tkatchenko (Clements 8687) (CANB).

51. *Grastidium exasperatum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium exasperatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 583-84 (1912) & Fig. Atlas t. 194, f. 729 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, above Bolobo, alt. c. 900 m, Sep. 1907, R. Schlechter 16527 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 194, f. 729 - as *Dendrobium exasperatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is characterised by the soft prickles covering the outside of the sepals and the disproportionately long pedicels. The flowers are pale yellow, closely red-spotted with the labellum white in front (Schlechter 1911-14).

52. *Grastidium extra-axillare* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium extra-axillare* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 606 (1912) & Fig. Atlas t. 204, f. 767 (1928). Type: Kaiser-Wilhelms-Land: On tall trees in the mountain forests near Kelel, alt. c. 300 m, Sep. 1907, R. Schlechter 16491 (holo B†; iso AMES!, E, G, K!, S).

ILLUSTRATIONS: Schlechter (1928), 204, f. 767 - as *Dendrobium extra-axillare*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: This species is distinguished by the inflorescence bracts emerging above the joint in the leaf-sheath. The flowers are whitish on the outside, densely red-brown-marbled on the inside, the labellum with a white mid-lobe, the column white (Schlechter (1911-14).

53. *Grastidium falcatum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium falcatum* J.J. Smith, Bull. Dépt. Agric. Indie Néerl. 19: 17 (1908); Nova Guinea 8: 72, t. 25, f. 78 (1909); & Nova Guinea 8(1): 558, t. 90D (1911). Type: cult. Bogor under no. 413R ex Dutch New Guinea: South of Geluks Hill, 1909, Lorentz Expedition, Rachmat 413 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1909), t. 25, f. 78; Smith (1911), t. 90D - both as *Dendrobium falcatum*.

DISTRIBUTION AND ECOLOGY: Irian Jaya. Epiphyte in rainforest.

NOTES: The flowers are white with purple-dots on both sepals and petals, the labellum white with purple raised convex transverse markings and with small purple spots merging towards the apex, an orange central callus that is pallid yellow towards the apex, and purple-spotted column-foot (Smith 1911). The plant illustrated as *D. falcatum* by O'Byrne (1994), is not that species, differing in having non-petiolate leaves, and a nearly entire labellum with an acute mid-lobe.

54. *Grastidium falcipetalum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium falcipetalum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 599-600 (1912) & Fig. Atlas t. 201, f. 757 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests at the foot of the Bismarck Range, alt. c. 300 m, Oct. 1908, R. Schlechter 18529 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 201, f. 757 - as *Dendrobium falcipetalum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in lowland rainforest.

NOTES: Allied to *Dendrobium microglossum* Schltr. but with conspicuously falcate lateral sepals and petals. The flowers are white with an orange-red keel on the labellum and orange-red tip to the column-foot (Schlechter 1911-14).

55. *Grastidium fissum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium fissum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 601 (1912) & Fig. Atlas t. 202, f. 759 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests at the foot of the Bismarck Range, alt. c. 300 m, Oct. 1908, R. Schlechter 18493 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 202, f. 759 - as *Dendrobium fissum*.



DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in lowland rainforest.

NOTES: Allied to *Dendrobium potamophila* Schltr. but differs by the sturdier growth habit, broader tepals, and broader labellum with acute apices to the arms of the side-lobes and to the mid-lobe. The flowers are yellowish white, the labellum has a yellow central crest, violet transverse wrinkles and yellow papillae directed backwards, the column-foot with an orange-yellow spot at the apex (Schlechter 1911-14).

56. *Grastidium fulgens* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium fulgens* J.J. Smith, Nova Guinea 18: 46-47, t. 9, f. 27 (1936). Type: Dutch New Guinea: Rouffaer-river, 175 m, hills, epiphytical in primeval forest, Aug. 1926, W.M. Docteurs van Leeuwen 10019 (holo BO!).

ILLUSTRATIONS: Smith (1936), t. 9., f. 27 - as *Dendrobium fulgens*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: "Flowers "fraise" with white glittering points and a white median streak, lip white, side lobes streaked dark violet, at the base two orange blotches, delicious scent of *Vanilla*" (Docteurs van Leeuwen in Smith 1936).

57. *Grastidium furcatopedicellatum* (Hayata) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium furcatopedicellatum* Hayata, Icon. Pl. Formos. 4: 39-40, f. 14 (1914). Type: 'Maisha', Aug. 1912, B. Hayata & S. Sasaki s.n. (holo TI).

Dendrobium biflorum auct. non. Sw.; Ying, Col. Illus. of Indig. Orch. Taiwan 1: 443 (1977).

ILLUSTRATIONS: Hayata (1914), f. 14 - as *Dendrobium furcatopedicellatum*.

DISTRIBUTION AND ECOLOGY: Taiwan. Epiphyte in rainforest.

NOTES: Flowers yellowish with purple spots on the outer surface of the tepals (Hayata 1914).

58. *Grastidium gatiense* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium gatiense* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 613-14 (1912) & Fig. Atlas t. 206, f. 778 (1928). Type: Kaiser-Wilhelms-

Land: On trees on the ridges of the Gati Mountains in the Minjem Valley, alt. c. 800 m, Dec. 1907, R. Schlechter 16991 (holo B†; iso AD, AMES!, BO! E, G, K!, L, NSW!).

ILLUSTRATIONS: Schlechter (1928), t. 206, f. 778 - as *Dendrobium gatiense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are white, the labellum with rose-red transverse warts and a yellow central keel, and column red at the base with a yellow callus (Schlechter 1911-14).

59. *Grastidium gibbosum* (A. Gilli) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium gibbosum* A. Gilli, Ann. Naturhist. Mus. Wien 84: 25-26, f. 13 (1983). Type: Papua New Guinea; Western Highlands; Wald zwischen Laiagam und Kandep, alt. c. 3100 m, 11 Feb. 1974, A. Gilli 448 (holo W!).

ILLUSTRATIONS: Gilli (1974), f. 13 - as *Dendrobium gibbosum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Mountainous areas.

NOTES: The flowers are red-violet (Gilli 1974).

60. *Grastidium giriwoense* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium giriwoense* J. J. Smith, Repert. Spec. Nov. Regni Veg. 12: 112-113 (1913) & Nova Guinea 12(4): 311, t. 113, f. 204 (1916). Type: Dutch New Guinea: On the Giriwo River, epiphytic in forest, July 1912, R.F. Janowski 141 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 113, f. 204 - as *Dendrobium giriwoense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Smith (1916) states that in habit this species was almost indistinguishable from that of *Dendrobium igneum* J.J. Smith and *D. patentissimum* J.J. Smith, but that the flowers are smaller, differently shaped and with a broad labellum with large lateral lobes. The flowers are white.

61. *Grastidium gjellerupii* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 448 (1983).

Basionym: *Dendrobium gjellerupii* J.J. Smith, Bull. Dépt. Agric. Néerl. 55: 4 (1911) & Nova Guinea 8(1): 554-55, t. 89A (1911). Type: Dutch New

Guinea; *Hollandia Bivouac*, on trees in the primary forest on a hill, alt. c. 50 m, Aug. 1910, K. Gjellerup 303 (holo BO!).

ILLUSTRATIONS: Smith (1911), t. 89A - as *Dendrobium gjellerupii*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in lowland rainforest.

NOTES: This species is distinguished by the development of a tooth at the tip of the leaf sheath opposite the lamina. The flowers are green-yellow, the labellum darker green (Smith 1916).

62. *Grastidium glaucophyllum* (Teijsm. et Binnend.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium glaucophyllum* Teijsm. et Binnend., Nat. Tijds. Ned. Ind. 5: 314 (1853); *Dendrobium rugosum* (Blume) Lindl. var. *glaucophyllum* (Teijsm. et Binnend.) J.J. Smith, Bull. Jard. Buit. (ser. 3) 1: 112 (1919). Type: 'Hab. as pedem montis Salak Javae', [J.E. Teijsmann & S. Binnendijk] (holo L).

ILLUSTRATIONS: Comber (1990), pp. 235, 236 top RHS - as *Dendrobium rugosum* var. *glaucophyllum*.

DISTRIBUTION AND ECOLOGY: Sumatra and Java. A pendulous epiphyte in rainforest at moderate altitude (450-850 m), usually hanging from low tree branches (Comber 1990).

NOTES: This species is distinguished from *Grastidium rugosum* Blume, by the glaucous to grey green leaves and the lack of purple colouration in juvenile growth. Flowers are light yellow with a reddish-brown central callus (Comber 1990).

63. *Grastidium glebulosum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium glebulosum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 581-82 (1912) & Fig. Atlas t. 193, f. 724 (1928). Types: Kaiser-Wilhelms-Land: On trees in the forests of the Bismarck Range, alt. c. 1200-1600 m, Nov. 1908, R. Schlechter 18734 (holo B†); On trees in the forests of the Finisterre Range, alt. c. 1200 m, Jan. 1909, R. Schlechter 19065 (para B†; isopara AMES!, BO!, L, NSW!).

ILLUSTRATIONS: Schlechter (1928), t. 193, f. 724 - as *Dendrobium glebulosum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphytic in mist forest along mountain ridges.

NOTES: This species is characterised by the sharply reflexed leaves. The flowers are greenish-white, lightly flushed on the outside with brown, and the column is yellow in front (Schlechter 1911-14).

SPECIMENS EXAMINED: Papua New Guinea. Madang Province; Simbai area, Mt Nandoi, alt. c. 2100 m, 28 Apr. 1990, Clements 7186 (CANB 9013434).

64. *Grastidium greenianum* (P.J. Cribb et B. Lewis) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium greenianum* P.J. Cribb & B.A. Lewis, Orch. Rev. 97: 251 (1989); Orchids Vanuatu 118, f. 24 (1989). Type: 'Vanuatu, Pentecost', alt. 310 m, 23 Jan. 1989, J.I. Wheatley 198A (holo K!).

ILLUSTRATIONS: Lewis and Cribb (1989), f. 24 - as *Dendrobium greenianum*.

DISTRIBUTION AND ECOLOGY: Vanuatu; Pentecost, Espirito Santo. A semi-pendulous epiphyte on small trees on the margins of wet forests.

NOTES: In our plants the flowers are cream to light yellow, the labellum yellow, with red down each side.

SPECIMENS EXAMINED: cultivated ANBG, 1 Mar. 1995 ex Vanuatu, Espirito Santo, Mt Tankara, c. 480 m, 30 Nov. 1989, Clements 5615 (CANB 8916257).

65. *Grastidium grossum* (Schltr.) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium grossum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 584-85 (1912) & Fig. Atlas t. 195, f. 732 (1928). Types: Kaiser-Wilhelms-Land: On trees in the forests of the Finisterre Range, alt. c. 1300 m, Jan. 1909, R. Schlechter 19073 (syn B†; isosyn AD, AMES!, BO!, G, K!, L, NSW, S); on trees in the forests of the Bismarck Range, alt. c. 1000 m, Oct. 1908, R. Schlechter 18495 (syn B†).

ILLUSTRATIONS: Schlechter (1928), t. 195, f. 732 - as *Dendrobium grossum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest at moderate altitude.

NOTES: This species is very robust in habit. The flowers are pale yellow or pale orange-yellow, with a reddish labellum and a red central crest on the latter (Schlechter 1911-14).



66. *Grastidium guamense* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium guamense* Ames, Philipp. J. Sci., Bot. 9: 14 (1914). Type: Guam Experiment Station 450, July 1912, H.B. Thompson s.n. (holo AMES!).

ILLUSTRATIONS: Raulerson & Rinehart (1992), pp. 97-98 - as *Dendrobium guamense*.

DISTRIBUTION AND ECOLOGY: Guam, Rota and Tinian. This species inhabits forests throughout these islands.

NOTES: Flowers cream, with a yellow callus.

SPECIMENS EXAMINED: Guam, Bededo, 31 May 1995, A. Rinehart s.n. (CANB!).

67. *Grastidium haemoglossum* (Thwaites) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium haemoglossum* Thwaites, Enum. Fl. Zeyl. 429 (1864). Types: Matelle, Gardner (syn PDA?); Dolosbagey District, 3000 ft., [Thwaites 3842] (syn K!; isosyn W!).

ILLUSTRATIONS: Jayaweera (1981), f. 40 - as *Dendrobium bambusaefolium*.

DISTRIBUTION AND ECOLOGY: Sri Lanka. "Rare on branches of trees in the submontane or mid-country tropical wet evergreen forests at about 1067 m alt." (Jayaweera 1981),

NOTES: This species was listed as a synonym of *Dendrobium bambusifolium* Parish ex Rchb.f. by Jayaweera (1981), but that name does not have priority. Also cited is Kandy District: Dolosbage, in 1865, s. coll. C.P. 3842 (PDA) as the holotype, but this does not correlate with the types of either species. According to Thwaites, the flowers are yellow with a dark red tinged labellum and column.

68. *Grastidium hamadryas* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium hamadryas* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 591 (1912) & Fig. Atlas t. 197, f. 742 (1928). Type: Kaiser-Wilhelms-Land: On trees in the mountain forests of the Djamu [River], alt. c. 800 m, Feb. 1908, R. Schlechter 17336 (holo B†; iso AD, AMES!, BO!, G, K!, L, NSW!, S).

ILLUSTRATIONS: Schlechter (1928), t. 197, f. 742 - as *Dendrobium hamadryas*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane forests.

NOTES: The flowers are closely brown-red-spotted with a yellow labellum, the lateral lobes of the labellum spotted brown-red (Schlechter 1911-14).

69. *Grastidium heteroglossum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium heteroglossum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 593-94 (1912) & Fig. Atlas t. 198, f. 746 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19866 (holo B†).

Dendrobium donacoides Ridl., Trans. Linn. Soc., Bot. 9: 166-67 (1916), syn. nov. Type: Dutch New Guinea; Utakwa River, Camp I at the base of the main range, on the back of a stony-bedded stream with some swampy land opposite, at 700 ft., Nov.-Dec. [1912]1913, C. Boden Kloss 296 (holo BM!; iso AMES!).

ILLUSTRATIONS: Schlechter (1928), t. 198, f. 746; O'Byrne (1994), t. 17, lower LHS labelled D958, p. 333 - both as *Dendrobium heteroglossum*.

DISTRIBUTION AND ECOLOGY: Irian Jaya and Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are blood-red to maroon-brown with a white or yellow labellum mid-lobe with white side-lobes. Ridley records that *Dendrobium donacoides* is "perhaps nearest to *D. multistriatum*, J.J. Sm., but the lip has shorter lateral lobes, and the disc and middle lobe are all covered with yellow hairs".

SPECIMENS EXAMINED: Papua New Guinea. Morobe Prov; Oomisis near Lae, alt. c., 1600 ft., Millar NGF 12290 (CANB 99985); cultivated Botanic Gardens, Lae, Aug. 1961 ex Papua New Guinea; Morobe Prov; Comsis Range, 17 Aug. 1961, Millar NGF 13816 (CANB 100105); cultivated ANBG, 7 Mar. 1995 ex Papua New Guinea; Madang Province; Karkar Island, Kevasis village, 14 Mar. 1990, Clements 5898, Ziesing, Dauncey & Benzing (CANB 9009236); cultivated ANBG 7 Mar. 1995 ex Papua New Guinea; Madang Province; Imbram Gorge and surrounds, 2 May 1990, Clements 7260, Ziesing & Jebb (CANB 9013509).

70. *Grastidium hollandeanum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium hollandeanum* J.J. Smith, Repert. Spec. Nov. Regni Veg. 12: 112 (1913) &



9. *Grastidium collinum*, Clements 6430



10. *Grastidium crassifolium*, Ziesing 269





11. *Grastidium dulce*, CANB 770899



12. *Grastidium everardii*, Clements 5807



13. *Grastidium exaltatum*, Clements 6638



14. *Grastidium greenianum*, Clements 5615





15. *Grastidium heteroglossum*, Clements 5898



16. *Grastidium igneum*, CANB 770906

Nova Guinea 12(4): 312, t. 113, f. 205 (1916). Type: Dutch New Guinea: Humboldt Bay near Hollandia, epiphytic in forest on rocky slopes at the sea, alt. c. 5-10 m, Mar. 1911, K. Gjellerup 443 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 113, f. 205 - as *Dendrobium hollandeanum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in coastal rainforest.

Notes: "According to Gjellerup, the sweetly aromatic smelling flowers are yellowish white to creamy yellow, the lip at the base with a 'V'-shaped yellow spot, the column-foot decorated with a 'W'-shaped blue-violet marking, the anther pale yellow" (Smith 1916).

71. *Grastidium holochilum* (Schltr.) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium holochilum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 582 (1912) & Fig. Atlas t. 194, f. 727 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range, alt. c. 1000 m, May 1909, R. Schlechter 19480 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 194, f. 727 - as *Dendrobium holochilum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is apparently rare having been collected only once by Schlechter. The flowers are whitish; the labellum reddish, sulphur-yellow towards the front (Schlechter 1911-14). O'Byrne (1994) in a note under *Dendrobium quinquedentatum* J.J. Smith, considered this species to be a cleistogamous form of *Dendrobium holochilum*, but without supporting evidence.

72. *Grastidium horstii* (J.J. Smith) Rauschert, Feddes Rept. 94: 449 (1983).

Basionym: *Dendrobium horstii* J.J. Smith, Icon. Bogor 3: 23: t. 210 (1906). Type: cult. Bogor ex Dutch New Guinea: Without specific locality, D.W. Horst (holo BO!; iso K!).

Synonym: *Dendrobium horstii* J.J. Smith var. *aureum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 1: 109 (1919), nom. nud.

ILLUSTRATIONS: Smith (1906), t. 210 - as *Dendrobium horstii*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya.

NOTES: This is another species in the group with a Vanda-like habit. It may have pretty orange-yellow flowers (Smith 1911) but this needs confirmation.

73. *Grastidium igneum* (J.J. Smith) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium igneum* J.J. Smith, Bull. Dépt. Agric. Néerl. 19: 17 (1908) & Nova Guinea 8(1): 73-74, t. 25, f. 78 (1909). Types: Dutch New Guinea: At the Noord River, at the base of Nepenthes Hill, epiphytic on *Pandanus* and *Metroxylon* swamps, June 1907, G. M. Versteeg 1260 (syn BO!); south of Geluks Hill, on trees in the primary forests, Aug. 1907, G. M. Versteeg 1572 (syn BO!).

ILLUSTRATIONS: Smith (1908), t. 25, f. 79 - as *Dendrobium igneum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea and Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: This species has brilliant orange flowers and flowers profusely in cultivation, qualities that make it one of the most attractive species in the genus.

SPECIMENS EXAMINED: cultivated ANBG, 23 Nov. 1993 ex Papua New Guinea, 1977, Millar (CANB 770906).

74. *Grastidium imbricatum* (J.J. Smith) Rauschert, Feddes Rept. 90(7-8): 449 (1983).

Basionym: *Dendrobium imbricatum* J.J. Smith, Bull. Dépt. Agric. Néerl. 39: 9 (1910) & Nova Guinea 8(1): 559-60, t. 91B (1911). Type: cult. Bogor, no. 72B ex Dutch New Guinea: At the upper Digul [Digoel River, Aug.-Sep. 1909], B. Branderhorst 72B (holo BO!; iso K!).

ILLUSTRATIONS: Smith (1911), t. 91B - as *Dendrobium imbricatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1911) reported that this was a very characteristic species "the stiff upright robust stalks are covered from bottom to top with thick, ovate, carnosae, pruinose blue leaves, reducing in size towards the tip and between which the thick carnosae yellow flowers appear". The specimen at Kew has no supporting locality details but it is from a cultivated plant from Bogor.



75. *Grastidium imitans* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 449 (1983).

Basionym: *Dendrobium imitans* Schltr., Repert. Spec. Nov. Regni Veg. 10: 80 (1911). Type: Celebes: On trees near Lansot (Minahassa), alt. c. 700 m, Dec. 1909, R. Schlechter 20625 (holo B†; iso BO!, K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Sulawesi. Epiphyte in rainforest.

NOTES: Schlechter (1911b) writes "This species is very closely related to *Dendrobium salaccense* Lindl., but is best considered as a separate species, since it differs in the shape of the lip and in the relatively longer mentum. The flowers are coloured white-yellow."

76. *Grastidium implicatum* (Fukuyama) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium implicatum* Fukuyama, Bot. Mag., Tokyo 51: 901-2, f. 2 (1937). Type: Micronesia; Ins. Palau, in parinarietis, 27 Sep. 1933, T. Hosokawa 7275 (holo; Uni. Imp. Taihokensis).

ILLUSTRATIONS: Fukuyama (1937), f. 2 - as *Dendrobium implicatum*.

DISTRIBUTION AND ECOLOGY: Palau Island.

77. *Grastidium incumbens* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 450 (1983).

Basionym: *Dendrobium incumbens* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 615 (1912) & Fig. Atlas t. 207, f. 781 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests not far from Alexishafen, alt. c. 40 m, Mar. 1909, R. Schlechter 19200 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 207, f. 781 - as *Dendrobium incumbens*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in coastal forest.

NOTES: The flowers are pale yellow (Schlechter 1911-14).

SPECIMENS EXAMINED: Papua New Guinea. Sepik District; Aitape Subdistrict; near Pultalul village, c. 1 mile inland from Aitape, alt. c. 10 ft, 1 June 1961, Darbyshire & Hoogland 7034 (CANB 96815).

78. *Grastidium inconspicuiflorum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium inconspicuiflorum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 2) 25: 42-43 (1917). Type: cult. Bogor sub. n. 68 ex Borneo: Goenoeng Djempanga, Exp. for rectification of the frontiers in North-Borneo, 1912, Amdjah s.n. (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Kalimantan. Epiphyte in rainforest.

NOTES: This species is allied to *Dendrobium isomerum* Schltr., but differs in having leaf apices entire, smaller flowers that are pale yellow, the labellum with a pale orange keel near the base, and column-foot pale yellow with and orange patch at the base (Smith 1917). *Dendrobium isomerum* was treated by Seidenfaden (1985) as a synonym of *D. indragiriense* Schltr. on the basis of it being described from a plant with peloric flowers. However, *D. isomerum* is based on a collection from Borneo while the type of *D. indragiriense* is from Sumatra. Since there is no scientific evidence that the two are representative of a single species, we preferred to treat them as distinct.

79. *Grastidium incurvatum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 450 (1983).

Basionym: *Dendrobium incurvatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 591-92 (1912) & Fig. Atlas t. 198, f. 743 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 800 m, Sep. 1909, R. Schlechter 20312 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 198, f. 743 - as *Dendrobium incurvatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are spotted very closely with violet-red (Schlechter 1911-14).

80. *Grastidium indragiriense* (Schltr.) Rauschert, Feddes Repert. 94: 450 (1983).

Basionym: *Dendrobium indragiriense* Schltr., Repert. Spec. Nov. Regni Veg. 9: 164-65, t. 31, 122 (1911). Type: Sumatra: In forests near Sungei Lalah, at Bezirke Indragiri, 4 May 1901, R. Schlechter 13277 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Sumatra. Epiphyte in rainforest.

NOTES: The illustrations and plates in Seidenfaden (1985), f. 164, t. 27b and Seidenfaden and Wood (1992), f. 193 h-j under the name *Dendrobium indragiriense*, from material collected in southern Thailand, are not representative of that species, which was described from material collected in Sumatra. Schlechter (1911a) records the flowers as yellowish-white.

There is a note on the Carr 229 specimen at K stating "Figured under *Dendrobium inconspicuiflorum*, J.J. S. in Gar. Bull. S.S. Vol. V (1929) Pl. IV, F.B. D. isomerum, Schltr. is a peloric form".

SPECIMENS EXAMINED: Malaya. Pahang State; Tembeling, Nov. 1929, Carr 229 (K).

81. *Grastidium involutum* (Lindl.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium involutum* Lindl., J. Linn. Soc., Bot. 3: 15 (1859). Type: Society Islands, pendulous from the branches of trees, May 1830, A. Mathews s.n. (holo K-L!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Tahiti. A pendulous epiphyte.

NOTES: "Flowers a quarter of an inch long, with the points of all the divisions hooked or rolled downwards" Lindley (1859).

SPECIMENS EXAMINED: Tubuai, N de Mahu, alt. c. 250 m, 24 May 1979, Hallé 6886 (L); Raiatea, Mt Temehabi, 7 Oct. 1926, Moore 180 (L).

82. *Grastidium isomerum* (Schltr.) Rauschert, Feddes Repert. 94: 450 (1983).

Basionym: *Dendrobium isomerum* Schltr., Bot. Jahrb. 45, Beibl. 104: 35 (1911). Type: Sumatra: On trees near Padang—Pandjong, alt. c. 900 m, 30 Jan. 1907, R. Schlechter 15980 (holo B†; iso AMES!, BO!, K!, L!, NSW!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Sumatra. Epiphyte in rainforest.

NOTES: Smith (1932) treated the peloric form of this species as a synonym of *G. indragiriense* without qualification, although from the list of specimens he studied it is clear he based it on a comparison of herbarium specimens. Seidenfaden (1985) follows Smith without addition. Schlechter (1911c), was, however, in no doubt that *Dendrobium isomerum*

should be treated as a separate species, stating that "Although I have seen hundreds of specimens of this species, I never found a flower on them that had not been pelorically transformed". The flowers are sulphur yellow.

83. *Grastidium iteratum* (J.J. Smith) Rauschert, Feddes Repert. 94: 450 (1983).

Basionym: *Dendrobium iteratum* J.J. Smith, Bot. Jahrb. 66: 193-94 (1934). Type: Dutch New Guinea: Weijland Range, alt. c. 1400 m, 15 Oct. 1931, G. Stein 575 (holo BO).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: "The plant belongs to those species described by Schlechter as the 'tridentifera'-group. It is characterised by the grass-like leaves and a peculiar lip" (Smith 1934).

84. *Grastidium juniperinum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 450 (1983).

Basionym: *Dendrobium juniperinum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 615-16 (1912) & Fig. Atlas t. 207, f. 782 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Finisterre Range, alt. c. 1250 m, Jan. 1909, R. Schlechter 19075 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 207, f. 782 - as *Dendrobium juniperinum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The plants has the habit of "a small-branched Juniper shrub". The flowers are pale pink, the labellum yellow-white (Schlechter 1911-14).

85. *Grastidium kandarianum* (Kraenzl.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium kandarianum* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 190-91 (1910). Type: Centromalayische Provinz: Celebes, S.-O.-Halbinsel bei Kandari, O. Beccari s.n. (holo FI; iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Sulawesi. Epiphyte in rainforest.

86. *Grastidium katherinae* (Hawkes) Rauschert, Feddes Repert. 90(7-8): 450 (1983).



Basionym: *Dendrobium katherinae* Hawkes Lloydia 20(1-4): 121 (1957), nom.; *Dendrobium pachyanthum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 589 (1912) & Fig. Atlas t. 197, f. 739 (1928), non Schltr. (1911). Type: Kaiser-Wilhelms-Land: On trees on the hill-forests close to Pema, on the Waria [River], alt. c. 400 m, June 1909, R. Schlechter 19906 (holo B⁺).

ILLUSTRATIONS: Schlechter (1928), Atlas t. 197, f. 739 - as *Dendrobium pachyanthum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are yellow, with red-brown spots on the inside, the column-foot with an orange-red spot (Schlechter 1911-14).

87. *Grastidium kenejianum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 450 (1983). **Fig. 4.**

Basionym: *Dendrobium kenejianum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 617-18 (1912) & Fig. Atlas t. 208, f. 785 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests in the vicinity of the Kenejia Range, alt. c. 150 m, Oct. 1908, R. Schlechter 18467 (holo B⁺).

Synonym: *Dendrobium ingratum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 2) 3: 72-73 (1912) & Nova Guinea 12(1): 53-54, t. 15, f. 42 (1913), **syn. nov.** Type: Dutch New Guinea: Seko at the Tami [River] mouth, July 1911, K. Gjellerup 579 (holo & iso BO!).

ILLUSTRATIONS: Schlechter (1928), t. 208, f. 785; O'Byrne (1994), p. 325 - both as *Dendrobium kenejianum*; Smith (1913), t. 15, f. 42 - as *Dendrobium ingratum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea, growing as a creeping to pendulous epiphyte on trees in or at the edge of lowland rainforest or on emergent trees, from sea level to c. 400 m.

NOTES: As reported above, this is one of a small group of species that have the appearance of *Monanthos*. Schlechter states that *Dendrobium kenejianum* often occurs as large scrambling plants 2-3 m long, with numerous aerial roots that emerge when the stems are in contact with the substrate, the growing shoots hanging from branches and forming a curtain. The immature stems are green-yellow, the developed ones pale brown, the leaves pale green, thin and carnose. The flowers are either green-

yellow or brown-yellow, the labellum characterised by a pale brown longitudinal stripe, and the column greenish white. The flowers of *G. kenejianum* have a characteristic odour like that of cat's or putrid horse urine (Smith 1913, O'Byrne 1994).

We can find no appreciable difference between the plants described as *Dendrobium kenejianum* and *D. ingratum*, either in habit and floral morphology. The characteristic putrid urine odour is unmistakable in living plants when in flower.

SPECIMENS EXAMINED: cultivated ANBG 18 Apr. 1994 ex Papua New Guinea; Madang Province; Imbram Gorge and surrounds, 2 May 1990, Clements 7249 (CANB 9013498).

88. *Grastidium kietaense* (Schltr.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium kietaense* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 614 (1912) & Fig. Atlas t. 207, f. 779 (1928). Type: Solomon Islands: On trees at the beach at Kieta Bay on Bougainville, Sep. 1905, L. et K. Rechinger 4824 (holo B⁺).

ILLUSTRATIONS: Schlechter (1928), t. 207, f. 779 - as *Dendrobium kietaense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; Bougainville. Epiphyte in coastal forest.

NOTES: The flowers are yellow (Schlechter 1911-14).

89. *Grastidium klossii* (Ridl.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium klossii* Ridl., Trans. Linn. Soc., Bot. 9: 166 (1916). Type: Dutch New Guinea: Utakwa River, Camp I, at 500 ft., Feb. 1913, C. Boden Kloss s.n. (holo BM!; iso K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Allied to *Dendrobium imbricatum* J.J. Smith, but the plant is much larger, and the mid-lobe of the labellum broad and truncate, not abruptly acuminate (Ridley 1916).

90. *Grastidium korinchense* (Ridl.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium korinchense* Ridl., J. Fed. Malay States Mus. 8: 92 (1917). Type: Sungai Kumbang, at 4,500 feet, Expedition to Korinchi 79 (holo BM).

ILLUSTRATIONS: None found.

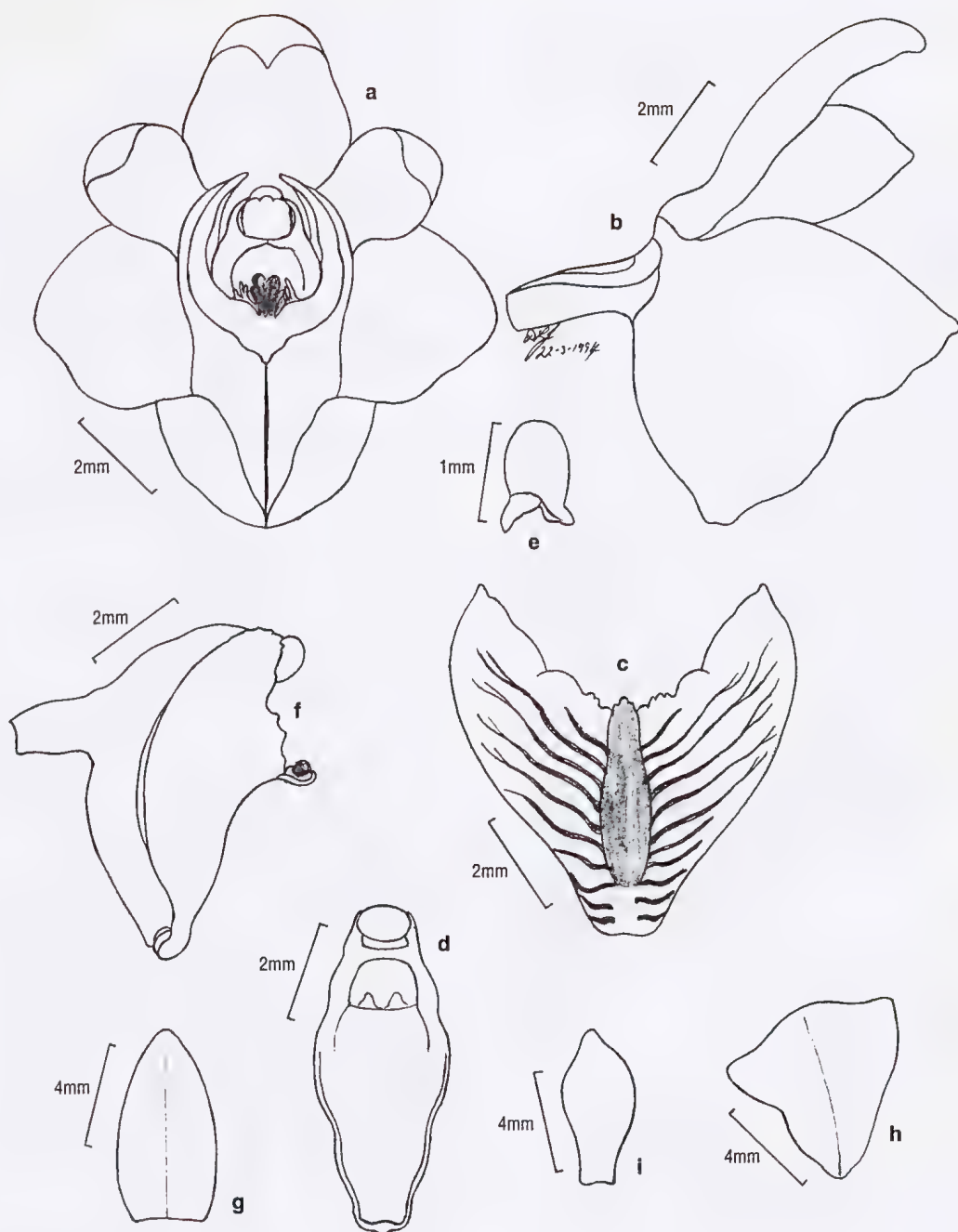


Figure 4. *Grastidium kenejianum*, Imbram Gorge, Papua New Guinea, Clements 7249: **a.** flower from front: **b.** flower from side: **c.** flattened labellum, from above: **d.** column from front: **e.** anther from side: **f.** side view of column and labellum: **g.** dorsal sepal: **h.** lateral sepal: **i.** petal (illustration by David Jones).

DISTRIBUTION AND ECOLOGY: Sumatra (endemic, *vide* Smith 1932).

91. *Grastidium kraenzlinii* (L.O. Williams) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium kraenzlinii* L.O. Williams, Bot. Mus. Leaflet 5: 122 (1938) *nom.*; *Dendrobium vitiense* Kraenzl., Mitt. Inst. Allg. Hamburg 5: 263-64 (1922), *nom. illeg.*, *non* Rolfe (1921). Type: 'Fidschi-Inseln. Insel. Levu' [Fiji; Viti Levu], Jan. 1879, Kleinschmidt s.n. (holo HBG!).

ILLUSTRATIONS: Kores (1991), f. 56 A-G, 88 lower LHS - as *Dendrobium kraenzlinii*.

DISTRIBUTION AND ECOLOGY: Fiji, growing "in dense or open forest at elevations of 100-600 m" (Kores 1991).

NOTES: The flowers are white to whitish-yellow with bright green at the base of the column-foot. (Kores 1991).

92. *Grastidium laceratum* (Schltr.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium laceratum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 577 (1912) & fig. Atlas t. 192, f. 721 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19876 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 192, f. 721 - as *Dendrobium laceratum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Similar in habit to the New Caledonia species *Dendrobium camaridiorum*. The flowers are yellowish-white, with the column-foot orange-yellow at the apex (Schlechter 1911-14).

93. *Grastidium lambusiforme* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983) (as "bambusiforme").

Basionym: *Dendrobium lambusiforme* Schltr., Bot. Jahrb. 58: 114 (1923). Type: North-east New Guinea: In open forest on the Lordberg (Sepik-Gebiet), alt. c. 6000 [600] m, Dec. 1912, C. Ledermann 10132 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; Sepik River area, growing on trees in forest.

NOTES: Mountains with an altitude of 6000 m do not exist in New Guinea so it must be assumed that

the altitude quoted in the type was an error and more likely 600 m was intended.

Schlechter (1923) describes this species as "A gigantic epiphyte hanging down laxly, with unbranched, bunched stems 2-2.5 m long and 6 mm thick. Leaves 13-17 cm long, 1.6-2 cm broad below the middle. Flowers of medium size for the section, yellowish white with wine-red spots, completely glabrous. Dorsal sepal about 2 cm long; the lateral ones about 1.3 cm long and forming at the base a mentum about 5 mm long. Petals 1.8 cm long, distinctly shorter than the dorsal sepal. Labellum about 9 mm long when spread out, 4 mm broad below the middle. Column very short c. 2.5 mm long. Ovary about 4 mm long."

94. *Grastidium leontoglossum* (Ridl.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Trichoglottis leontoglossa* Ridl., J. Bot. (London) 24: 355 (1886); *Dendrobium leontoglossum* (Ridl.) Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 575 (1912). Type: New Guinea: Sogere, at 2000 ft., H.O. Forbes 839 (holo BM).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Flowers yellow with purple spots (Ridley 1886).

95. *Grastidium lepidochilum* (Kraenzl.) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium lepidochilum* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 186-87 (1910); *Dendrobium spec.* Kraenzl., Bot. Jahrb. Syst. 25: 603 (1898). Type: Melanesische Provinz: Samoa-Inseln: Upolu, am Letogo-Flusse, Mar. 1894, Reinecke 233 (holo B†; iso BM!, HBG!, K).

ILLUSTRATIONS: Cribb and Whistler (1996), t. 17D, f. 20 - as *Dendrobium lepidochilum*.

DISTRIBUTION AND ECOLOGY: Samoa; Savai'i, Tutuil and Upolu. Epiphytic in swamp and montane forest.

NOTES: Flowers yellow speckled all over inside of sepals and petals with red, the labellum side-lobes red-striped (Cribb and Whistler 1996).

96. *Grastidium leptocladum* (Hayata) Rauschert, Feddes Repert. 90(7-8): 450 (1983).

Basionym: *Dendrobium leptocladum* Hayata, Icon. Pl. Formos. 4: 42 (1914), *nom.*; *Dendrobium tenuicaule*

Hayata, Mater. Flor. Formos 316-17 (1911). Type: Formosa: Shokwa, July, T. Kawakami & Y. Shimada s.n. (holo TI).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Taiwan. Epiphyte in rainforest.

97. *Grastidium leytense* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium leytense* Ames, Orchid. 5: 126-27 (1915). Type: Philippines: On trees at great height, Leyte, Dagami, alt. 60 m, 15 Jan. 1913, C.A. Wenzel 82 (holo AMES!; iso K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Philippines; Leyte, growing on trees in rainforest, alt. c. 60-500 m (Valmayor 1984).

NOTES: The flowers yellowish, the labellum tinged with pale purple (Ames 1915).

This species resembles *G. collinum* in habit and flower colour but further research is needed to determine the relationships.

SPECIMENS EXAMINED: Philippines. Leyte; Jaro, Beunavista, alt. c. 500 m, 20 May 1914, Wenzel s.n. (K).

98. *Grastidium longicaule* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium longicaule* J.J. Smith, Bull. Dépt. Agric. Néerl. 39: 9-10 (1910) & Nova Guinea 8:558-59, t. 91A (1911), non Schltr. (1923). Type: cult. Bogor no. 199 ex Dutch New Guinea: In the southern region, 1909, (Second Lorentz Expedition) Rachmat 119 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1911), t. 91A - as *Dendrobium longicaule*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: This species is allied to *Dendrobium multistriatum* J.J. Smith, but differs in the sepals and petals, which are broader towards the tip, a dotted labellum with a relatively smaller mid-lobe and larger lateral lobes (Smith 1911). The flowers are yellow, spotted brown, the labellum with violet-brown spots on the side and mid-lobes, and an orange spot at the apex of the column-foot.

99. *Grastidium longissimum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium longissimum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 586-87 (1912) & Fig. Atlas t. 197, f. 735 (1928). Type: Kaiser-Wilhelms-Land: On tall trees in the forests of the Maboro Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19878 (holo B†; iso L, S).

ILLUSTRATIONS: Schlechter (1928), t. 197, f. - as *Dendrobium longissimum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. A pendulous epiphyte growing on tall trees in rainforest.

NOTES: This species is characteristic of a group within the genus, comprising *G. longissimum*, *G. perlongum*, *G. solomonense* and *G. sarcodes*, that have long pendulous stems, sometimes two to three metres long, hanging vertically in a lax manner and swinging to-and-fro in the wind. The strongly scented flowers are creamy-yellow with an orange-yellow keel on the labellum, and brown margins and veining on the lateral lobes of the labellum (Schlechter 1911-14).

100. *Grastidium luteocilium* (Rupp) Rauschert, Feddes Repert. 94(7-8): 450 (1983).

Basionym: *Dendrobium luteocilium* Rupp, North Queensland Naturalist 13(77): 1, t. (1945). Type: 'Babinda, North Queensland', 26 Oct. 1945, J.H. Wilkie s.n. (holo NSW!).

ILLUSTRATIONS: Dockrill (1969), p. 499; Dockrill (1994), p. 697; O'Byrne (1994), p. 327 - all as *Dendrobium luteocilium*.

DISTRIBUTION AND ECOLOGY: Australia, Queensland North Kennedy and Cook Districts and Papua New Guinea, Gulf Province.

NOTES: The flowers are yellow to yellow-orange, the verrucose calli on the side-lobes and hair apices on the mid-lobe light purple, the callus and base of the column foot bright orange.

SPECIMENS EXAMINED: cultivated ANBG 15 Mar. 1994 ex Australia; Cook District, Leo Creek, 1978, Butler 398 (CANB 7806316); Queensland, Torres Strait, Moa Island, northern end of Moa Peak, 1989, Jones 3591 (CANB, BRI); Australia; Queensland; Cook District; Langkelly Creek, alt. c. 500 m, 23 Nov. 1971, Stocker 822 (BRI 161668, QRS 4122).

101. *Grastidium luzonense* (Lindl.) M.A. Clem. et D.L. Jones, comb. nov.



Basionym: *Dendrobium luzonense* Lindl., Bot. Mag., misc. 54 (1844). Type: Luzon, M. Caravalko s.n. (holo L-K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Philippines; Agusan, Benquet, Catanduanes, Davao, Kaling-apayao, Lanao, Leyte, Mindoro, Pangasinan and Sorsogon. Epiphyte in forest from sea level to c. 1300 m (Valmayor 1984).

NOTES: According to Valmayor (1984) the flowers are straw-coloured with a slight greenish tinge.

SPECIMENS EXAMINED: Philippines, Cumming 2126 (K, W); Luzon, Kalinga Province, alt. c. 1000 m, Mar. 1918, Boettches s.n. (W).

102. *Grastidium macrostigma* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 450 (1983).

Basionym: *Dendrobium macrostigma* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 10: 146-48 (1928). Types: West Seran: North of Wai Kawa, 200-300 m, forest, epiphytical, 8 Nov. 1918, L. Rutten 1855 (syn BO!, isosyn AMES!, K!); South Seran: Wai Kaba, east of Laimoe, 100-400 m, forest, bank vegetation, sandstone rocks, 18 Oct. 1917, L. Rutten 344 (syn BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Ceram. Epiphyte in rainforest.

NOTES: According to the collector in the West Ceram collection the "Basal part of the flowers white, apical part pale rosy, fragrant" and "flowers white" in the South Ceram collection.

103. *Grastidium malacanthum* (Kraenzl.) Rauschert, Feddes Repert. 90(7-8): 450 (1983).

Basionym: *Dendrobium malacanthum* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 194-95 (1910). Type: 'Papuanische Provinz: Neu-Guinea; Bourawari, an *Ficus* wachsend', alt. c. 780 m., 1887, W.A.Sayer s.n. (holo HBG!).

ILLUSTRATIONS: Kraenzlin (1910), f. 14 f-g - as *Dendrobium malacanthum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Described from a poorly preserved herbarium specimen, so it was difficult to accurately determine the details of the tepals and labellum (Kraenzlin 1910). Flowers dirty pink. The illustration of the flower is crude.

104. *Grastidium malaitense* (Rolfe) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium malaitense* Rolfe, Kew Bull. 1921: 55 (1921). Type: cult. Suva, 7 Aug. 1907 ex Solomon Islands: Langi Langi, Malaita, Aug. 1905, E. im Thum 363 (holo K!).

[*Dendrobium kietaense* auct. non Schltr.: B.A. Lewis and P.J. Cribb, Orch. Solom. & Bougain. 168-69, f.40 L-M (1991)]

ILLUSTRATIONS: Lewis and Cribb (1991), f. 40 L-M - as *Dendrobium kietaense*.

DISTRIBUTION AND ECOLOGY: Solomon Islands; Malaita. Epiphyte in rainforest.

NOTES: "Flowers white, ephemeral and very easily detached. Near *D. salaccense*, Blume, Ames, but with larger flowers." (Rolfe 1921). Treated as synonym of *Dendrobium kietaense* Schltr. by Lewis and Cribb (1989) without comment but the illustrated material, which is from the Solomon Islands, does not match that illustrated by Schlechter (1928) as *Dendrobium kietaense*, particularly with regard to the proportion and shape of the labellum.

SPECIMENS EXAMINED: Solomon Islands. Kolombangara, alt. c. 35 m, 28 Aug. 1965, Hunt 2463 (K).

105. *Grastidium marginatum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. et stat. nov.

Basionym: *Dendrobium polyschistum* Schltr. var. *marginatum* J.J. Smith, Nova Guinea 19: 411-12, t. 62, f. 63 (1932). Type: Dutch New Guinea: In the northern part, ridge to Doorman-top, slope to the north, epiphytical, alt. c. 1420 m, 4 Oct. 1920, H.J. Lam 1499 (holo L!; iso BO!).

ILLUSTRATIONS: Smith (1932), t. 62, f. 63 - as *Dendrobium polyschistum* var. *marginatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea. Epiphyte in rainforest.

NOTES: Smith (1932) described this species from two dried stems and a single flower preserved in alcohol, noting its similarity to *D. polyschistum* and *D. dionaeoides*. "Roots greenish white, leaves dull green tinged a little violet above, sepals and petals dirty rosy with a little green and violet, lip pale yellow with a little yellow apex, the side lobes thinly bordered violet, column greenish yellow with a violet apex, the foot violet with a yellow apex, ovary dirty rosy". Differs from *G. polyschistum* in the lateral sepals being shallowly falcate with a shorter

linear apical extension, fewer more deeply cut marginal teeth on the labellum mid-lobe and long-acuminate labellum apex.

SPECIMENS EXAMINED: Papua New Guinea. Eastern Highlands Prov.; Goroka Subdistrict; Range behind Kabiufa No. 2., 3 Jan. 1970, Dockrill NGF 34022 (CANB 206917).

106. *Grastidium meliodorum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium meliodorum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 576-77 (1912). Type: Kaiser-Wilhelms-Land: On trees in the slopes of the Kani Range, on the upper Mudjene [River], alt. c. 600 m, June 1908, R. Schlechter 17888 (holo B†; iso AD, AMES!, BO!, E, G, K!, L).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: For some unaccountable reason, Schlechter did not provide an illustration of the flower of this species. Schlechter (1911-14) noted that this species had a superficial resemblance to *Dendrobium acuminatissimum*, "but it is much more slender and taller with longer leaves and appreciably elongate sepals. The species, like many of its relatives, has a fairly strong, sweetish odour reminiscent of honey. The flowers are flushed lightly with red on the outside, with a yellowish mid-lobe to the labellum".

107. *Grastidium microglossum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium microglossum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 598-99 (1912) & Fig. Atlas t. 201, f. 755 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range, (Waria River), alt. c. 1000 m, May 1909, R. Schlechter 19519 (holo B†); cultivated ANBG, 22 Oct. 1990 ex Papua New Guinea; Morobe Province; hills behind Garassa, 6 Apr. 1990, Clements 6390b (neo CANB, here designated).

ILLUSTRATIONS: Schlechter (1928), t. 201, f. 755 - as *Dendrobium microglossum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: A relatively common species in the rainforests of eastern Papua New Guinea. Characteristically, the inflorescence of this species

projects forwards rather than being at right angles to the stem. The flowers are cream-coloured, the labellum with an orange-yellow crest, the column-foot with an orange-yellow spot (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 19 Nov. 1989 ex Papua New Guinea, 1977, Millar (CANB 770277).

108. *Grastidium morotaiense* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 451 (1983).

Basionym: *Dendrobium morotaiense* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 14: 163-64 (1937). Type: cult. Bogor sub n. 929-1-78 ex Moluccas: Morotai, 23 July 1926, H.J. Lam 130 (holo BO!; iso in alcohol BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Morotai Island (immediately north of Halmahera in the Moluccas). Epiphyte in rainforest.

NOTES: Smith (1937) states that this species is near to *Dendrobium rugosum* Lindl. from Java and Sumatra but differs in having broader leaves, much larger, differently coloured flowers, more distinctly crenulate side-lobes and the papilliae of the mid-lobe much longer and partly hair-like. The flower colour is described as "sepals and petals equally dark brown, mentum, lip and ovary canary yellow" (Smith 1937).

109. *Grastidium multifolium* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium multifolium* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 590-91 (1912) & Fig. Atlas, t. 197, f. 741 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, (Waria River), alt. c. 800 m, Sep. 1909, R. Schlechter 20263 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 197, f. 741 - as *Dendrobium multifolium*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are cream-yellow with an orange-yellow labellum and an orange-yellow thickening at the tip of the column-foot (Schlechter 1911-14).

110. *Grastidium multistriatum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 451 (1983).



Basionym: *Dendrobium multistriatum* J.J. Smith, Bull. Dépt. Agric. Néerl. 19: 18-19 (1908) & Nova Guinea 8: 75, t. 26, f. 81 (1909). Type: Dutch New Guinea: At the Noord River, (Lorentz Expedition 1907), Djibdja 131 (syn BO); south of Geluks Hill, (Lorentz Expedition 1907), Djibdja 666 (syn in alcohol BO!).

ILLUSTRATIONS: Smith (1909), t. 26, f. 81 - as *Dendrobium multistriatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1909) records that this species is allied to *Dendrobium pruinatum* Teijsm. et Binnend. and *D. rugosum* (Blume) Lindl. and is possibly closest to *D. falcatum*, but differs from the latter in having larger pointed leaves, larger flowers and shape of the labellum. The sepals and petals are yellow, with chocolate-brown spots, the labellum whitish, yellow towards the apex, covered with numerous dark purple verrucose calli, and a light orange central keel.

111. *Grastidium muriciferum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. et stat. nov.

Basionym: *Dendrobium pictum* Schltr. var. *muriciferum* J.J. Smith, Nova Guinea 12(4): 308-309, t. 112, f. 202 (1916). Type: cult. Bogor 529Dj ex Dutch New Guinea: On the Lorentz River, near Alkmaar Bivouac (First Lorentz Expedition 1909), Djidja 529 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 112, f. 202 - as *Dendrobium pictum* var. *muriciferum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1916) compared the material he had of *Dendrobium pictum* var. *muriciferum* from Irian Jaya with that described as *D. pictum* Schltr. (= *Grastidium summerhayesianum*) from German New Guinea. He comments that the description of *D. pictum* agrees so well with the plant he had in hand that it could not be specifically separated. We have studied several living collections of *Grastidium summerhayesianum* from Papua New Guinea, and none matches that illustrated by Smith. In *G. summerhayesianum* the segments are all narrower, and mid-lobe of the labellum is much longer and nearly as broad as the basal part compared with that illustrated by Smith. Therefore, these two taxa are here treated as separate species.

112. *Grastidium neo-guineense* (Hawkes et Heller) Rauschert, Feddes Rep. 94 (7-8): 451 (1983).

Basionym: *Dendrobium neo-guineense* Hawkes et Heller, Lloydia 20: 122 (1957), nom.; *Dendrobium longicaule* Schltr., Bot. Jahrb. 58: 115 (1923), non J.J. Smith (1910). Type: North-east New Guinea: In range forests near the Lager Felsspitze (Sepik River), alt. c. 1400-1500 m, July 1913, C. Ledermann 12363 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Schlechter (1923) wrote that this species "stands somewhat isolated and only the shape of the flowers show some resemblance to *Dendrobium angraecifolium* (= *Grastidium tridentiferum*), in other characters only distantly related to that species, lacking the point of the column-foot so characteristic of that species". He states that the flowers are snow white.

113. *Grastidium nephrolepidis* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium nephrolepidis* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 608-609 (1912) & Fig. Atlas t. 205, f. 771 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests near Peso (Eitape District), alt. c. 15 m, Aug. 1909, R. Schlechter 19987 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 205, f. 771 - as *Dendrobium nephrolepidis*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in coastal rainforest.

NOTES: Schlechter (1911-14) states that this species has at the foot of the stem, a 30-40 cm long leafless part covered with sheaths, more terete and wire-like than the remainder of the stem, and a more pronounced development of the mentum compared to those of allied species. The plant habit is reminiscent of members of the fern genus *Nephrolepis*. The flowers are greenish-white, the labellum greenish, the column-foot violet marked and orange at the base.

114. *Grastidium neuroglossum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium neuroglossum* Schltr. in K. Schum. et Laut., Fl. Schutzg. Sudsee, Nachtr. 170-71 (1905); Repert. Spec. Nov. Regni Veg., Beih. 1:

596 (1912) & Fig. Atlas t. 199, f. 750 (1928). Types: Kaiser-Wilhelms-Land: On trees in clearings in the Bismarck Range, alt. c. 1300 m, Jan. 1902, R. Schlechter 13981 (holo B⁺); Kaiser-Wilhelms-Land: on trees in the forests of the Finisterre Range, alt. c. 1000 m, Jan. 1909, R. Schlechter 19162 (para B⁺; isopara AMES, BO!, E, K!, L!).

ILLUSTRATIONS: Schlechter (1928), t. 199, f. 750 - as *Dendrobium neuroglossum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane forest often overhanging streams.

NOTES: This species is distinguished from all others by its completely undivided labellum. The flowers are yellowish, closely brown-spotted inside with a muddy violet labellum and violet spot at the apex of the column-foot (Schlechter 1911-14).

SPECIMENS EXAMINED: Papua New Guinea. Oro Province; Myola, 23 Apr. 1990, Clements 7000 & Ziesing (CANB 9013248); cultivated ANBG, 29 Feb. 1985 ex Papua New Guinea; Enga Province; Paiela Dist; Korombi, 1978, Reeve 640 (CANB 8600513);

115. *Grastidium nimium* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium nimium* J.J. Smith, Nova Guinea 19: 412-13, t. 63, f. 64 (1932). Type: Schouten Islands: Biak, north coast, Warsa, growing in full sun, 21 Aug. 1915, W. Feuilletau de Bruyn 366 (holo L!).

ILLUSTRATIONS: Smith (1932), t. 63, f. 64 - as *Dendrobium nimium*.

DISTRIBUTION AND ECOLOGY: Indonesia; Biak Island off the north coast of Irian Jaya.

NOTES: This species differs from all other in the genus by the thread-like appendix to the labellum mid-lobe (Smith 1932).

116. *Grastidium niveopurpureum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium niveopurpureum* J.J. Smith, Nova Guinea 19: 415-16, t. 64, f. 68 (1932). Type: cult. Buitenzorg Botanic Gardens ex Dutch New Guinea, origin unknown, J. Schuller tot Peursum s.n. (holo BO!; iso in alcohol BO!).

ILLUSTRATIONS: Smith (1932), t. 64, f. 68 - as *Dendrobium niveopurpureum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya ?

NOTES: This is another species of *Grastidium* with a *Vanda*-like habit which was compared by Smith to *Dendrobium horstii*, but differing in having snow-white flowers and a broader purple labellum (Smith 1932).

117. *Grastidium njongense* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium njongense* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 610-11 (1912) & Fig. Atlas t.205, f. 774 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests on the Njonge [Creek] near Ambo (Finisterre Range), alt. c. 600 m, Aug. 1908, R. Schlechter 18127 (holo B⁺).

ILLUSTRATIONS: Schlechter (1928), t.205, f. 774 - as *Dendrobium njongense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are snow-white, the labellum with pale yellow lateral lobes, the column-foot with red markings and an orange-yellow spot (Schlechter 1911-14).

118. *Grastidium obcuneatum* (F.M. Bailey) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium obcuneatum* F.M. Bailey, Queensland Agric. J. 17: 231-32 (1906). Type: East Coast, British New Guinea, Rev. Copland King (holo BRI!; iso BO!, K!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species was described from a dry herbarium specimen sent to Bailey. The flower colour is recorded as "probably white".

119. *Grastidium obliquum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium obliquum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 606-607 (1912) & Fig. Atlas t. 204, f. 768 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests above the Saugueti Base at the foot of the Bismarck Range, alt. c. 300 m, Nov. 1908, R. Schlechter 18882 (holo B⁺; iso AMES!, BO!, G, L, NSW, S).

ILLUSTRATIONS: Schlechter (1928), t. 204, f. 768 - as *Dendrobium obliquum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in lowland rainforest.



NOTES: This species is similar in habit to *Dendrobium axillare* but is smaller in all its parts. The flowers are yellowish white with an orange-red spot on the apex of the column-foot (Schlechter 1911-14).

120. *Grastidium obscure-auriculatum* (A. Gilli) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium obscure-auriculatum* A. Gilli, Ann. Naturhist. Mus. Wien 84: 29-30, f. 18 (1983). Type: Papua New Guinea; Chimbu District; Wald (Pandaneen herrschend) nordlich von Mingende, alt. c. 2100 m, 24 Jan. 1974, A. Gilli 266 (holo W!).

ILLUSTRATIONS: Gilli (1984), f. - as *Dendrobium obscure-auriculatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane forest.

NOTES: The flowers are yellow with the labellum striped and spotted with violet (Gilli 1983).

121. *Grastidium ochranthum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium ochranthum* Schltr. in K. Schum. et Laut., Fl. Schutzg. Sudsee, Nachtr. 171 (1905); Repert. Spec. Nov. Regni Veg., Beih. 1: 604 (1912) & Fig. Atlas t. 203, f. 764 (1928). Type: Neu-Mecklenburg: On trees in the forests near Punam, alt. c. 600 m, July 1902, R. Schlechter 14656 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 203, f. 764 - as *Dendrobium ochranthum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are pale yellow, the labellum red-margined with black-red lateral lobes (Schlechter 1911-14).

122. *Grastidium ochroleucum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. et stat. nov.

Basionym: *Dendrobium ostrinum* J.J. Smith var. *ochroleucum* J.J. Smith, Nova Guinea 12(1): 51 (1913). Type: cult. Hollandia Bivouac, Mar. 1911 ex German New Guinea: Epiphytic on open forests along streams on the upper Kaiserin-Augusta [Sepik] River, in the central mountains, alt. c. 250 m, K. Gjellerup 444 (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in open forest along streams in the upper reaches to a large river.

NOTES: In describing this taxon at varietal rank, Smith noted that it differed from *D. ostrinum* J.J. Smith in a number of characters. According to the collector, Gjellerup, "the flowers are cream-coloured, the lip and column pale sulphur-yellow, with apex of the mentum salmon-coloured". He also reported that the flowers "have the odour of weak hydrochloric acid". Smith went on to state that apart from the colour, the variety differs from *D. ostrinum* "in the relatively narrower sepals and petals and a dense bunch of prickles on the middle lobe of the lip" (Smith 1913). These differences are indicative of specific rather than varietal rank.

SPECIMENS EXAMINED: cult. Bogor sub n. 193 ex Dutch New Guinea, 15 July 1920, Lam 624, 625, 626 (BO!); Dutch New Guinea: In the northern part, Mamberamo, Pioneer-bivouac, 26 m, epiphytical in forest, 24 Apr. 1914, Thomsen 702 (BO!); l.c., 7 Aug. 1914, Thomsen 807 (BO!); l.c., 22 Sep. 1914, Thomsen 888 (BO!).

123. *Grastidium odontopus* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium odontopus* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 612 (1912) & Fig. Atlas t. 206, f. 776 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Jan. 1908, R. Schlechter 17248 (holo B†; iso AMES!, BO!, G, L, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 206, f. 776 - as *Dendrobium odontopus*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are yellowish-white (Schlechter 1911-14).

124. *Grastidium orientale* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium orientale* J.J. Smith, Orchid. Ambon 70 (1905). Type: Ambon, without specific locality details, Lieutenant of the Chinese in Ambon (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Ambon.

NOTES: When describing the species, Smith (1905a) was unsure about it being a *Grastidium*. However, in the Addendum he noted that the description of this species was prepared from notes made during the return journey to Bogor, and that details of the inflorescence were incomplete. When a plant of this species flowered in cultivation at Bogor it had the characteristic compressed bracts surrounding the inflorescence. Flowers pale yellow.

125. *Grastidium ornithoflorum* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium ornithoflorum* Ames, Orchid. 3: 60-61, f. 46 (1908). Type: Philippines Islands: Mindanao, Province of Misamis, on Mt. Bliss, flowers yellowish white, alt. 5700 ft., 25 May 1906, E.A. Mearns and W.I. Hutchinson 4727 (holo AMES!, iso L!, Bureau of Science, Manila).

ILLUSTRATIONS: Ames (1908), f. 46 - as *Dendrobium ornithoflorum*.

DISTRIBUTION AND ECOLOGY: Philippines; Mindanao, Misamis, Negros Oriental (Dumaguete) and Quezon. Epiphyte in rainforest at an altitude of c. 1900 m (Valmayor 1984).

NOTES: Flowers yellowish-white (Valmayor 1984).

126. *Grastidium ostrinum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium ostrinum* J.J. Smith, Bull. Dépt. Agric. Indie Néerl. 39: 10 (1910) & Nova Guinea 8: 556, t. 40A (1911). Type: Dutch New Guinea: At the Noord River, on trees in the primary forests of the plain, Oct. 1909, von Römer 568 (syn BO); cult. Bogor n. 45R ex south of Geluks Hill, 1909, Rachmat (syn BO).

ILLUSTRATIONS: Smith (1911), t. 40A - as *Dendrobium ostrinum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea. Epiphyte in rainforest.

NOTES: Easily identified by its lilac-purple flowers with orange labellum callus and orange spot at the apex of the column-foot.

SPECIMENS EXAMINED: cultivated ANBG, 9 July 1990 ex Papua New Guinea; Morobe Province, Waria River area, Garassa, 6 Apr. 1990, Clements 6390a (CANB).

127. *Grastidium pantherinum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium pantherinum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 579 (1912) & Fig. Atlas t. 193, f. 723 (1928). Type: Kaiser-Wilhelms-Land: On isolated trees on the slopes of the Finisterre Range, alt. c. 1100 m, July 1908, R. Schlechter 18012 (holo B†; iso BO!, L).

ILLUSTRATIONS: Schlechter (1928), t. 193, f. 723 - as *Dendrobium pantherinum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

SPECIMENS EXAMINED: Papua New Guinea. Sepik Dist.; Atup Creek near Telefomin, alt. c. 7000 ft., 10 Jan. 1965, Henty NGF 20933 (CANB).

128. *Grastidium papyraceum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 451 (1983). Fig. 5.

Basionym: *Dendrobium papyraceum* J.J. Smith, Repert. Spec. Nov. Regni Veg. 12: 113 (1913) & Nova Guinea 12(4): 312-13, t.113, f. 206 (1916). Type: cult. Bogor n. 257B ex Dutch New Guinea: On the upper Eilanden River, [Jan 1910], B. Branderhorst 257 (holo BO!).

ILLUSTRATIONS: Smith (1916), t.113, f. 206 - as *Dendrobium papyraceum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea. Epiphyte in rainforest.

NOTES: Flowers lemon-yellow, the labellum laterallobes red and keel orange.

SPECIMENS EXAMINED: cultivated ANBG 17 Nov. 1989 ex Papua New Guinea; Enga Province, Korombi, Paiela Census Division, alt. c. 2000 m, 1978, Reeve 842 (PNGH 54) (CANB 7904218).

129. *Grastidium parvilobum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium parvilobum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 609-610 (1912) & Fig. Atlas t. 205, f. 772 (1928). Type: Kaiser-Wilhelms-Land: On trees on the forests of [Mount] Gomadjidji, alt. c. 450 m, May 1909, R. Schlechter 19359 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 205, f. 772 - as *Dendrobium parvilobum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are salmon-yellow (Schlechter 1911-14).

130. *Grastidium patentissimum* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 451 (1983).



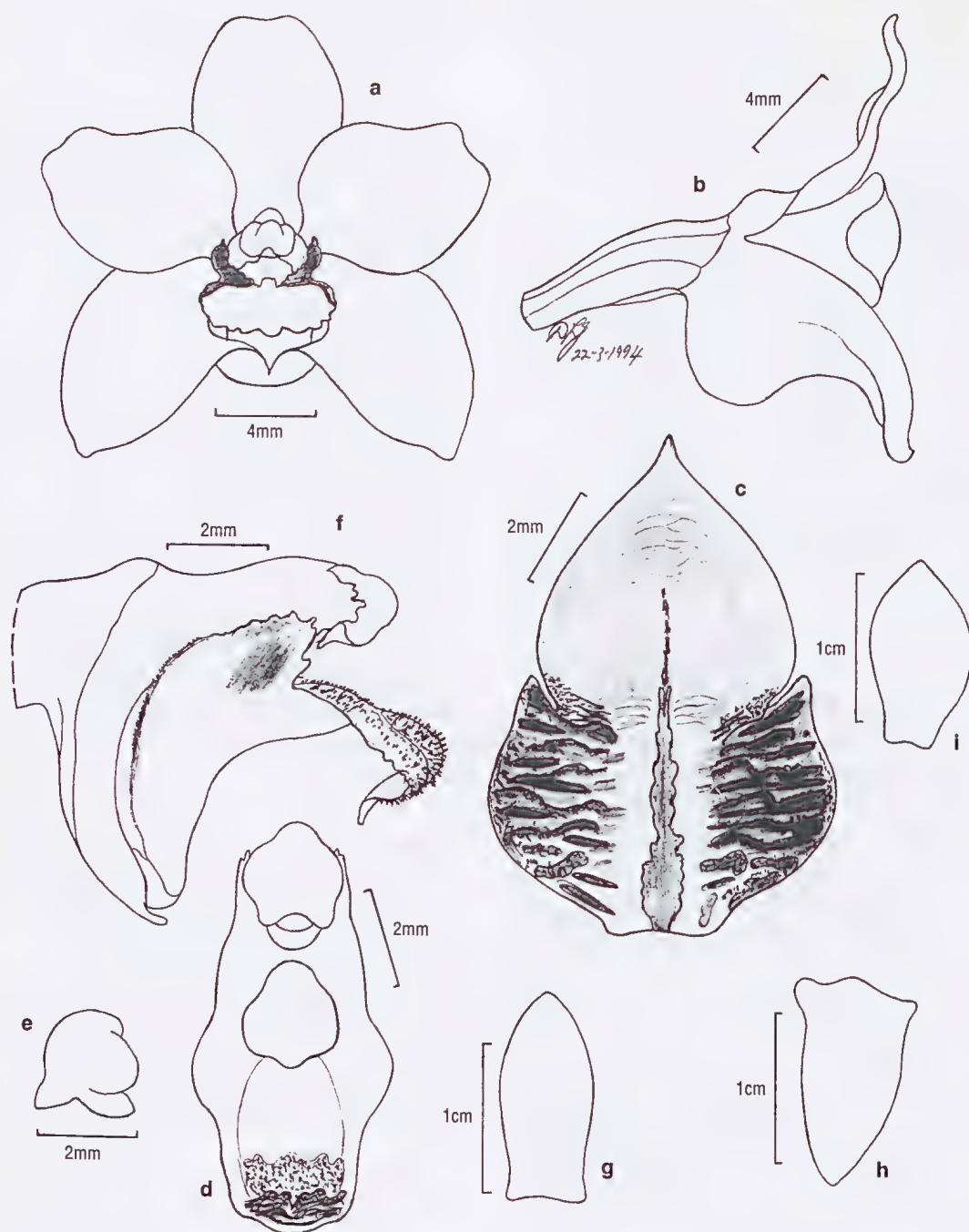


Figure 5. *Grastidium papyraceum*, Korombi, Papua New Guinea, Reeve 842: **a.** flower from front: **b.** flower from side: **c.** flattened labellum, from above: **d.** column from front: **e.** anther from side: **f.** column and labellum from side: **g.** dorsal sepal: **h.** lateral sepal: **i.** petal (illustration by David Jones).

Basionym: *Dendrobium patentissimum* J.J. Smith, Repert. Spec. Nov. Regni Veg. 12: 112 (1913) & Nova Guinea 12(4): 310-11, t. 112, f. 203 (1916). Type: Dutch New Guinea: Gautier Range, on the north slope, epiphytic in forest on limestone and basalt, alt. c. 900 m, Nov. 1911, K. Gjellerup 855 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 112, f. 203 - as *Dendrobium patentissimum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest on limestone and basalt.

NOTES: This species is similar in habit to *G. igneum* but differs in having smaller orange-yellow flowers, minutely and sparingly spotted on the sepals, a broader labellum with shorter lateral lobes, and broad very blunt petals (Smith 1916).

131. *Grastidium patulum* (Schltr.) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium patulum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 610 (1912) & Fig. Atlas t. 205, f. 773 (1928). Type: Kaiser-Wilhelms-Land: On trees on the forests of the Finisterre Range, alt. c. 1100 m, July 1908, R. Schlechter 17987 (holo B†; iso AMES!, G, L).

ILLUSTRATIONS: Schlechter (1928), t. 205, f. 773 - as *Dendrobium patulum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are snow-white, the labellum brownish violet in its lower half, and the column-foot marked with violet (Schlechter 1911-14).

132. *Grastidium peekelii* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium peekelii* Schltr., Bot. Jahrb. 58: 115-116 (1923). Type: Bismarck Archipel: On *Calophyllum* trees along the beach at Mamatanai (Neu-Mecklenburg), June 1910, G. Peekel 459 (holo B†).

ILLUSTRATIONS: Peekel (1984), f. 186 - as *Dendrobium peekelii*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in *Calophyllum* along beaches.

NOTES: Although reported to occur throughout much of coastal Papua New Guinea (O'Byrne 1994), it is doubtful if this is actually the case. Plants at the ANBG, collected from near Garassa

which is inland on the Waria River, are similar to those illustrated by O'Byrne but they do not match the description of *G. peekelii* in having, overall, slightly larger flowers, but with a much shorter (c. 0.7 mm long) ovary and pedicel (c. 27 mm in *G. peekelii*); and, the interior margins of side-lobes entire not subdentate.

133. *Grastidium pensile* (Ridl.) Rauschert, Feddes Repert. 94 (7-8): 451 (1983).

Basionym: *Dendrobium pensile* Ridl., J. Linn. Soc. 32: 253 (1896). Types: Malay Peninsula; Singapore, near Selitar River, 1891, H.N. Ridley s.n. (syn BM!); Johore, Native collector ex H. N. Ridley s.n. (syn BM!); Rhio, Native collector ex H.N. Ridley s.n. (syn BM!).

ILLUSTRATIONS: Seidenfaden & Wood (1992), f. 193a-b - as *Dendrobium pensile*.

DISTRIBUTION AND ECOLOGY: Singapore, Malaya and Thailand. Epiphyte along streams and in old mangroves.

NOTES: "A very curious plant with a large number of long, hanging stems, covered with thick fleshy leaves. The flowers have a very thick conical ovary and no pedicel. They are produced in pairs subtended by a large dry bract. The lip is remarkably small and the globose column narrowed at the top is very singular." (Ridley 1896). The flowers are yellow.

134. *Grastidium pergracile* (Ames) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium pergracile* Ames, Philipp. J. Sc., Bot. 1913, 8: 423-24 (1914). Type: Philippines: Mindanao; Lake Lanao, Camp Keithly, Mar. 1907, M.S. Clemens 999 (holo AMES!; iso BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Philippines; Mindanao, Lanao. Epiphyte in rainforest.

NOTES: Ames (1914) states that "*Dendrobium pergracile* is closely related to *D. acuminatissimum* (Bl.) Lindl. from which it is easily separated by its smaller flowers". Flowers are white according to Valmayor (1984).

135. *Grastidium perlongum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium perlongum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 587-88 (1912) & Fig. Atlas t. 196, f. 736 (1928). Type: Kaiser-Wilhelms-Land: On tall trees in the forests of the



Ibo Range, alt. c. 1000 m, Dec. 1907, R. Schlechter 17102 (holo B†; iso AMES!, BO!, E, G, K!, L, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 196, f. 736 - as *Dendrobium perlongum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This is one of a group of species with vertically hanging stems several metres long, that swing to-and-fro in the wind. In habit *G. perlongum* is almost indistinguishable from *G. longissimum*, differing only in having larger flowers, narrower sepals and petals and labellum with larger more acute lateral lobes, a narrower mid-lobe and central callus extending nearly to the apex. The flowers are cream-coloured, the labellum yellowish with an orange-red central band and brownish lateral lobes (Schlechter 1911-14).

136. *Grastidium phaeanthum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium phaeanthum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 603 (1912) & Fig. Atlas t. 202, f. 762 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19883 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 202, f. 762 - as *Dendrobium phaeanthum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species belongs to a small group of species that in habit are bamboo-like and can easily be confused with non-flowering plants of species in *Dendrobium* sect. *Pleianthe* Schltr. "The flowers are brownish, the labellum whitish, the column-foot red-spotted with a pale brown spot in front" (Schlechter 1911-14).

137. *Grastidium planum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 451 (1983).

Basionym: *Dendrobium planum* J.J. Smith, Fl. Buitenz. 6: 352-53, t. 267 (1905). Type: Java: Tjihanjawar, J.J. Smith (holo BO?).

ILLUSTRATIONS: Smith (1908), t. 267 - as *Dendrobium planum*.

DISTRIBUTION AND ECOLOGY: Indonesia; West Java and Sumatra. Epiphyte in rainforest at around 1000 m (Comber 1990).

NOTES: A species allied to *G. collinum* from New Guinea, but Schlechter on examining material of both, advocated the two be regarded as separate (Schlechter 1911-14). The flowers are pale brownish yellow, the labellum with red-brown margins (Comber 1990).

SPECIMENS EXAMINED: cultivated Bogor No. 70, 31 Aug. 1906, Smith s.n. (K).

138. *Grastidium plumilobum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium plumilobum* J.J. Smith, Nova Guinea 18: 45-46, t. 9, f. 26 (1936). Type: Dutch New Guinea: Rouffaer-river, confluent C, 250 m, epiphytical in primeval forest., Sep. 1926, W.M. Docteurs van Leeuwen 10313 (holo L!; iso BO!).

ILLUSTRATIONS: Smith (1936), t. 9, f. 26 - as *Dendrobium plumilobum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1936) states that this species differs from *Dendrobium laceratum* in the short, broad, very blunt lateral lobes of the labellum, the relatively much longer mid-lobe, the keel ending in a free portion, quadrangular column auricles, and the orbicular broadly rostrate anther. The flowers are light yellow.

139. *Grastidium podochiloides* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium podochiloides* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 611-12 (1912) & Fig. Atlas t. 206, f. 725 (1928). Type: Kaiser-Wilhelms-Land: On tall trees in the forests on the Kani Range, alt. c. 800 m, May 1908, R. Schlechter 17738 (holo B†; iso AMES!, BO!, L!).

ILLUSTRATIONS: Schlechter (1928), t. 206, f. 725 - as *Dendrobium podochiloides*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species belongs to a group with non-axillary flower-sheaths. The flowers are white, flushed outside with red, the labellum with a yellow crest and dense, violet-red tuberculations (Schlechter 1911-14).

140. *Grastidium pogonantherum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium pogonantherum* J.J. Smith, Bull. Dépt. Agric. Néerl. 5: 9-10 (1907). Type:



17. *Grastidium igneum*, CANB 770906



18. *Grastidium kenejianum*, Clements 7249





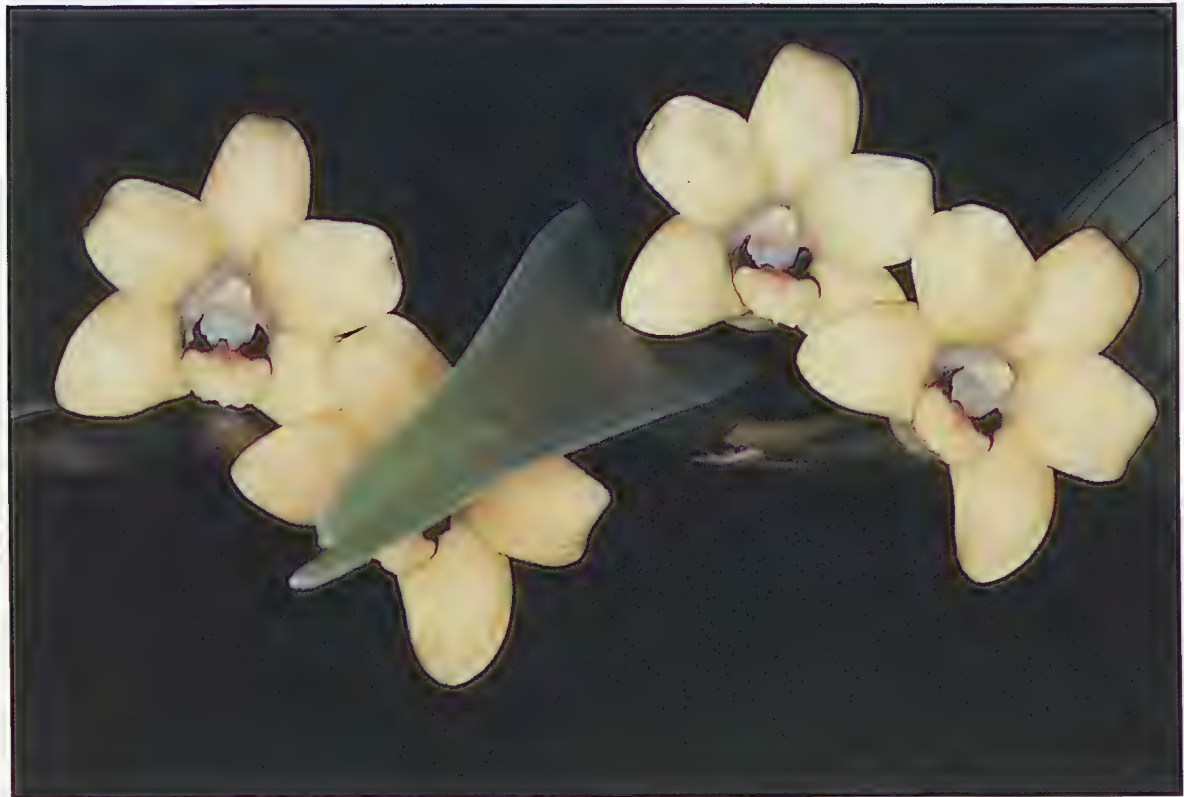
19. *Grastidium microglossum*, Clements 6390b



20. *Grastidium neuroglossum*, Clements 7000



21. *Grastidium ostrinum*, Clements 6390a



22. *Grastidium papyraceum*, Reeve 842





23. *Grastidium potamophilum*, Clements 6399



24. *Grastidium sladei*, Clements 5588a

cultivated Buitenzorg Botanic Gardens, 1907, ex Dutch New Guinea; Aru Island, 1893, M. Treub (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Aru Island.

NOTES: This species has the habit of *G. acuminatissimum* but the flowers are much smaller with short acute tepals. The flowers are white, the labellum with dark purple markings on the lateral lobes and an orange keel.

SPECIMENS EXAMINED: cultivated Bogor, 26 Feb. 1909, ex Aroe, van Kamper s.n. (K).

141. *Grastidium polyschistum* (Schltr.) Brieger in Schltr., *Die Orchideen* 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium polyschistum* Schltr., *Repert. Spec. Nov. Regni Veg.*, Beih. 1: 575-76 (1912) & *Fig. Atlas* t. 192, f. 720 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests on the Torricelli Range, alt. c. 1000 m, Sep. 1909, R. Schlechter 20279 (holo B†; iso AMES!, BO!, E, G, K!, L!, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 192, f. 720 - as *Dendrobium polyschistum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: Differs from *G. marginatum* in the lateral sepals being strongly uncinatate with a longer linear apical extension, more numerous shallow marginal teeth on the labellum mid-lobe and shortly acute to acuminate labellum apex. Schlechter (1911-14) states that "it seems to be restricted to the mist-forest formation. The flowers are white, flushed slightly red externally".

SPECIMENS EXAMINED: Papua New Guinea. Enga Prov; Lagaip Dist; Yondalia, alt. c. 1800 m, Feb. 1983, Reeve 1028 (CANB 900275).

142. *Grastidium polyphyllum* (Schltr.) Rauschert, *Feddes Repert.* 90(7-8): 452 (1983).

Basionym: *Dendrobium polyphyllum* Schltr., *Bot. Jahrb.* 58: 116 (1923). Type: North-eastern New Guinea: In mist-forest on the Hunsteinspitze (Sepik River), alt. c. 1300 m, Feb. 1913, C. Ledermann 11144 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: This species is allied to *G. phaeanthum*, but differs in the leaves (spreading, lanceolate-ligulate, and a slightly obtuse to barely obtuse, pronounced unequally bilobed apex in *D. polyphyllum*, compared to erect spreading, oblong, obtuse with an unequally bilobed apex in *D. phaeanthum*), and drawn out sepals and petals. The flowers are brown-red (Schlechter 1923).

143. *Grastidium ponapense* (Schltr.) M.A. Clem. et D.L. Jones, *comb. nov.*

Basionym: *Dendrobium ponapense* Schltr., *Bot. Jahrb.* 61: 471-72 (1921). Type: Caroline Island; On the island of Ponape (without locality details), 1913, C. Ledermann 13144 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Ponapei. Epiphyte in rainforest.

NOTES: Schlechter (1921) considered this species allied to *Dendrobium pruinatum* Teijsm. et Binnend. from Ambon. The flowers are yellow, with a slightly darker keel on the labellum, and orange spot on the column-foot apex.

SPECIMENS EXAMINED: cultivated Guam, 31 May 1995, A. Rinehart ex Ponapei (CANB).

144. *Grastidium potamophilum* (Schltr.) Rauschert, *Feddes Repert.* 90(7-8): 452 (1983).

Basionym: *Dendrobium potamophila* Schltr., *Repert. Spec. Nov. Regni Veg.*, Beih. 1: 600-601 (1912) & *Fig. Atlas* t. 201, f. 758 (1928). Type: Kaiser-Wilhelms-Land: On trees on the Minjem [River], close to the Wobbe and Kelel, alt. c. 200-300 m, Sep. 1907, R. Schlechter 16482 (holo B†; BO, G, L, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 201, f. 758 - as *Dendrobium potamophila*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte on trees along rivers.

NOTES: This is one of the smallest species in *Grastidium*. The plants are compact, erect, with light green leaves; reminiscent of *Appendicula* in habit. The flowers are white with yellow papillae on the labellum and pale red lateral lobes (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 28 Dec. 1990 ex Papua New Guinea; Morobe Province, hills behind Garassa, alt. c. 500 m, 6 Apr. 1990, Clements



6399, Ziesing, Benzing, Dauncey, Kairo & Simeon (CANB 9012857).

145. *Grastidium pruinatum* (Teijsm. et Binnend.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium pruinatum* Teijsm. et Binnend., Natuurk. Tijdschr. Ned.-Indie 24: 314 (1862). Type: 'Hab. in archipelago Moluccano, Teijsmann' (holo L, not found).

Synonym: *Dendrobium crispilobum* J.J. Smith, Repert. Spec. Nov. Regni Veg. 11: 136 (1912) & Nova Guinea 12(4): 305 (1916). Type: cult. Buitenzorg ex Dutch New Guinea: without precise locality (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Ambon and Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1916) reduced *D. crispilobum* to a synonym of *D. pruinatum* on the basis of the following: "*D. crispilobum* J.J. Sm. was established from a very robust plant which started to flower soon after reaching Buitenzorg. Although the flowers were hardly different from those of *D. pruinatum* T. et B., I considered it necessary to regard it as a different species, on account of the very different habit. The long rigid stems all stood erect and had widely protruding, ovate leaves. However, when the plant started to sprout, the situation changed completely. The newly formed shoots, as well as the tip of the half-grown stems, no longer grew straight upwards, but more-or-less bent over; the new leaves were no longer ovate, but longish and rotated at the base to achieve an approximately horizontal position. In habit, the plant now could not be distinguished from the other specimens of *D. pruinatum* T. et B., cultivated at Buitenzorg".

The flowers are yellow the column white. The specific epithet was derived from the nature of the leaf sheaths.

146. *Grastidium pulleanum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium pulleanum* J.J. Smith, Bull. Dépt. Agric. Néerl. 55: 4-5 (1911) & Nova Guinea. 8: 557-58, t. 90C (1911). Type: cult. Bogor n. 225B ex Dutch New Guinea: At the upper Eilanden River, [Jan. 1910], B. Branderhorst 225B (holo BO!).

ILLUSTRATIONS: Smith (1911), t. 90C - as *Dendrobium pulleanum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: This species is allied to *G. heteroglossum* but the flowers are smaller and the labellum nearly entire with only rudimentary lateral lobes near the centre. In *G. heteroglossum* the flowers are larger, dark brown-red to red with a broadly triangular labellum and larger lateral lobes. In *G. pulleanum* the flowers are a pale copper colour, the labellum with pale pink lateral markings, a white mid-lobe and pale orange base to the keel and white column-foot.

147. *Grastidium pulvinatum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium pulvinatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 597-98 (1912) & Fig. Atlas t. 200, f. 754 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forest of the Finisterre Range, alt. c. 1200 m, Jan. 1909, R. Schlechter 19168 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 200, f. 754 - as *Dendrobium pulvinatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Although Schlechter compared this species with *Dendrobium cyrtosepalum*, it appears more closely allied to *D. microglossum* from which it differs in the inflorescence arising at right-angles to the stem rather than projecting forward and the shorter lateral lobes. The flowers are pale yellow, the labellum with small violet tubercles, orange-red crests and violet callus, and column-foot with an orange-red spot at the apex (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 11 Nov. 1996 ex Papua New Guinea; Madang Province; Wassabamal logging purchase, 31 Mar. 1990, Clements 6326 (CANB 9012709).

148. *Grastidium quinquecaudatum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov

Basionym: *Dendrobium quinquecaudatum* J.J. Smith, Nova Guinea 19: 411, t. 62, f. 62 (1932); *Dendrobium acuminatissimum* Blume var. *latifolium* J.J. Smith, Nova Guinea 8: 553-54 (1911). Type: Dutch New Guinea: On a tree in the primary forest at the north coast near Hollandia Bivouac, on Humboldt Bay, alt. c. 10 m, Aug. 1910, K. Gjellerup 301 (holo BO!).

ILLUSTRATIONS: Smith (1932), t. 62, f. 62 - as *Dendrobium quinquecaudatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in coastal rainforest.

NOTES: Smith originally described this orchid at varietal rank before renaming it at specific rank. The flowers are white with a purple spot at the top of the mentum.

149. *Grastidium quinquedentatum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium quinquedentatum* J.J. Smith, Bull. Dépt. Agric. Néerl. 19: 19 (1908) & Nova Guinea 8(1): 76, t. 26, f. 83 (1909). Type: Dutch New Guinea: Nepenthes Hill, on trees in the primary forests, June 1907, G.M. Versteeg 1316 (holo BO!; iso in alcohol BO!).

ILLUSTRATIONS: Smith (1909), t. 26, f. 83; O'Byrne (1994), p. 347 - both as *Dendrobium quinquedentatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea. In Papua New Guinea growing on moss-covered branches of trees along rivers and creeks in lowland tropical savanna.

NOTES: This species appears to be cleistogamous (O'Byrne 1994). The flowers are yellowish-white, the labellum pale rose-red below and with a very narrow purple margin, the column partly orange below (Smith 1909).

150. *Grastidium rechingerorum* (Schltr.) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium rechingerorum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 597 (1912) & Fig. Atlas t. 200, f. 752 (1928). Type: Solomon Islands: On trees in the coastal forest near the native village of Djup on Bougainville, Sep. 1905, L & K. Rechinger 4990 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 200, f. 752 - as *Dendrobium rechingerorum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; Bougainville. Epiphyte in coastal forests.

NOTES: The description of this species is as follows: "In habit this species is about midway between *D. densifolium* Schltr. and the species following [*D. cyrtosepalum*]. From the first it is distinguished by the long lateral lobes and broad keel of the labellum; also the sepals and petals are narrower and sharper." (Schlechter 1911-14). There is no note regarding the colour of the flowers.

The specimen illustrated and described under *D. rechingerorum* in Lewis and Cribb (1991) is not that species, differing in having shorter, broader tepals, and less distinct, shorter lateral lobes that overlap with the sides of the mid-lobe.

151. *Grastidium recurvilabre* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium recurvilabre* J.J. Smith, Meded. Rijksk. Herb. (Leiden) No. 23: 9-10 (1915) & Nova Guinea 12(4): 307-308, t. 112, f. 201 (1916). Type: Dutch New Guinea: Lorentz River near the Kloof Bivouac, epiphytic in forest, Jan. 1913, J.B. Sitanala 11217 (holo BO).

ILLUSTRATIONS: Smith (1916), t. 112, f. 201 - as *Dendrobium recurvilabre*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1916) states that this species is distinguished from the clearly related *D. perlongum* by the shorter sepals, warty on the outside, a shorter, broader labellum, five-sided in plan, and with a non-undulate mid-lobe, a half-oval anther, blunt at the apex and papillose, and a much shorter ovary. Flowers are yellow with an orange labellum.

152. *Grastidium reinecke* (Schltr.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium reinecke* Schltr., Repert. Spec. Nov. Regni Veg. 9: 102 (1910); *Dendrobium gemellum* auct. non Lindl.: Kraenzl., Bot. Jahrb. Syst. 25: 604 (1898). Type: Samoa, Upolu, Am Letogofluss auf Disoxylon, Mar. 1894, F. Reinecke 234 (holo B†; iso BM!, HBG!, G, K).

Dendrobium samoanum Schltr., Repert. Spec. Nov. Regni Veg. 9: 102 (1910), nom. nud.

ILLUSTRATIONS: Cribb & Whistler (1996), t. 17C - as *Dendrobium reinecke*.

DISTRIBUTION AND ECOLOGY: Samoa. Epiphyte in montane and cloud forest.

NOTES: Flowers white spotted with pink or red.

153. *Grastidium rubropictum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium rubropictum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 612-13 (1912) & Fig. Atlas t. 206, f. 777 (1928). Types: Kaiser-Wilhelms-Land: On trees in the forests near Peso, in the Eitape District, alt. c. 15 m, Aug. 1908, R.



Schlechter 19981 (syn B†; isosyn AMES, BO!, G, L!, NSW, S); loc. cit., Aug. 1908, R. Schlechter 20002 (syn B†).

ILLUSTRATIONS: Schlechter (1928), t. 206, f. 777 - as *Dendrobium rubropictum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in lowland rainforest.

NOTES: The flowers are white with red markings on the lateral lobes of the labellum and a golden yellow crest and a column-foot with a golden yellow spot on the apex (Schlechter 1911-14).

154. *Grastidium rugosum* Blume, Bijdr. 333 (1825); *Dendrobium rugosum* (Blume) Lindl., Gen. Sp. Orch. Pl. 87 (1830); *Callista rugosa* (Blume) Kuntze, Rev. Gen. Pl. 2: 655 (1891). Type: 'Hab. in sylvis altioribus montis Salak, Javae', Feb., C. Blume s.n. (holo L!; iso L!, W!).

Dendrobium purpurascens Teijsm. et Binnend., Nat. Tijds. Ned. Ind. 5: 314 (1853). Type: Hab. as pedem montis Salak Javae, [J.E. Teijsmann & S. Binnendijk] (holo L).

Grastidium rugosum (Lindl.) Rauschert, Feddes Rep. 94 (7-8): 450 (1983), nom. illeg., superfl.

ILLUSTRATIONS: Smith (1908), t. 266 - as *Dendrobium rugosum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Java. Epiphyte in rainforest.

NOTES: This species, which is closely allied to *G. glaucophyllum*, is distinguished by the shiny light green leaves, and the immature leaves being dark violet or purple. By comparison, *G. glaucophyllum* has grey-green glaucous leaves in both the juvenile and mature plant. The flowers of *G. rugosum* are greenish-yellow, the labellum striped with red in lower half and column-foot yellowish-white with an orange spot (Backer 1968).

SPECIMENS EXAMINED: Indonesia. West Java; Sukanegara, S. of Ciaujur, alt. c. 300 m, Sep. 1981, Comber 1248 (K).

155. *Grastidium rugulosum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium rugulosum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 2) 2: 10-11 (1911) & Nova Guinea 12(1): 51-52, t. 14, f. 40 (1913). Type: Dutch New Guinea: On Goliath Mountain, in the shade on a smooth tree trunk, isolated and rare, alt. c. 150, Apr. 1911, A.C. de Kock 181 (holo BO!).

ILLUSTRATIONS: Smith (1913), t. 14, f. 40 - as *Dendrobium rugulosum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in coastal rainforest.

NOTES: Smith (1913) states that "Amongst the Papuan species of the section with the labellum bereft of bunches of hair or papillae, this species is characterised by the narrow graminaceous leaves. The flowers are white".

156. *Grastidium sacculiferum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium sacculiferum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 5: 77-78 (1922), non J.J. Smith (1929). Type: cult. Bogor sub n. 4[3]3 ex Ternate, V.M.A. Beguin (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Ternate.

NOTES: Flowers are yellow with the odour of *Vanilla*, the labellum yellowish-white with pale green markings on the lateral lobes and mid-lobe, the central keel greenish, the column-foot green with a yellow-brown spot at the apex (Smith 1922).

157. *Grastidium salaccense* Blume, Bijdr. 333 (1825); *Dendrobium salaccense* (Blume) Lindl., Gen. Sp. Orch. Pl. 86 (1830); *Callista salaccense* (Blume) Kuntze, Rev. Gen. 2: 655 (1891). Type: Java; G. Salak, April, C. Blume (holo L!; iso AMES!).

Dendrobium intermedium Teijsm. et Binnend., Nat. Tijds. Ned. Ind. 5: 490 (1853); *Callista intermedia* (Teijsm. et Binnend.) Kuntze, Rev. Gen. Pl. 2: 655 (1891). Type: Java, G. Salak [J.E. Teijsmann & S. Binnendijk] (holo BO!).

Dendrobium salaccense (Blume) Lindl. var. *major* J.J. Smith., Fl. Javae 349 (1907). Types: cult. Bogor No. 903, 348, 377, 378 ex Java and Sumatra (syn BO).

ILLUSTRATIONS: Smith (1908), t. 264; Comber (1990), p. 236, lower RHS - both as *Dendrobium salaccense*.

DISTRIBUTION AND ECOLOGY: Indonesia; Java, Sumatra and perhaps elsewhere but the exact distribution is unknown because of confusion with similar species in the south-east Asian region, eg. *G. cathcartii* in India (Seidenfaden 1985). Epiphyte in rainforest. Flowers cream, mentum greenish towards the apex on outside.

NOTES: Smith (1907), described *D. salaccense* var. *major* from material collected in Sumatra and Java in which the flowers were larger than those he considered typical for the species. Until more material is collected it seems best to treat this taxon as falling within the range of variation of the species. The flowers are pale yellow and the centre of the labellum is covered with reddish tubercles (Comber 1990).

SPECIMENS EXAMINED: Indonesia. Sabah, Crocker Range, Tenom valley, on trees beside river, alt. c. 500-800 ft, Jan. 1983, Lamb AL 71/83 (K); Djaro Dam, c. 10 km NE of Muara Uja, Kalimantan Selatan, alt. 80 m, 18 Oct. 1972, de Vogel 1689 (K). Flowers white, lip greenish white; East Java, G. Lamongan, growing on lava flow rocks especially in hollows, almost full sun, 20 Oct. 1979, Comber 1110 (K); Sumatra, 6 Dec. 1906, Korthals s.n. (K).

158. *Grastidium salicifolium* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium salicifolium* J.J. Smith, Nova Guinea 18: 48, t. 10, f. 28 (1936). Type: Dutch New Guinea: Rouffaer-river, confluent C, 250 m, epiphytical in primeval forest, Sep. 1926, W.M. Docteurs van Leeuwen 19263 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1936), t. 10, f. 28 - as *Dendrobium salicifolium*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in primeval rainforest.

NOTES: The "flowers are white, inside nearly wholly spotted light violet, the lip with an orange dot" (Smith 1936).

159. *Grastidium salomonense* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium salomonense* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 588 (1912) & Fig. Atlas t. 196, f. 737 (1928). Type: Solomon Islands: On trees at Kieta Bay, Bougainville, pendent, one to two metres in length, Sep. 1905, L. & K. Rechinger 2563 (holo B†; iso W!).

ILLUSTRATIONS: Schlechter (1928), t. 196, f. 737 - as *Dendrobium salomonense*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; Bougainville and possibly the Solomon Islands. Pendulous epiphyte in coastal forest.

NOTES: Schlechter (1911-14) cited this name "in sched." [on a herbarium label] and made no detailed description in that text but with the comment that a more accurate description would be published elsewhere, but was not. However, in comparing *Dendrobium salomonense* with *Dendrobium perlongum*, albeit very briefly, and by providing a descriptive illustration, this complies with the ICBN regarding the valid publication of a new species at that time. Consequently the name has been accepted by Rauschert (1983) and Lewis and Cribb (1991), citing Schlechter's 1912 work as the place of publication of the name.

The flowers are yellow according to Schlechter (1911-4).

160. *Grastidium sarcodes* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium sarcodes* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 588-89 (1912) & Fig. Atlas t. 196, f. 738 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Feb. 1908, R. Schlechter 17290 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 196, f. 738; O'Byrne (1994), p. 353, t. 18, lower LHS D920 - both as *Dendrobium sarcodes*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is allied to *Dendrobium perlongum*. The sepals are verrucose on the outside, the flowers are white, dotted with red, the labellum yellowish with an orange-red keel and brown transverse wrinkles (Schlechter 1911-14).

161. *Grastidium sarcophyllum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium sarcophyllum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 616-17 (1912) & Fig. Atlas t. 208, f. 783 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Finisterre Range, alt. c. 1300 m, July 1908, R. Schlechter 18013 (holo B†; iso AMES!, BO, E, G, K!, L, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 208, f. 783 - as *Dendrobium sarcophyllum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.



NOTES: This species is distinguished by its thick, fleshy, terete leaves. The flowers are pale yellow, the labellum with an orange-red centre (Schlechter 1911-14).

162. *Grastidium schwartzkopffianum* (Kraenzl.) Rauschert, Feddes Rep. 94 (7-8): 452 (1983).

Basionym: *Dendrobium schwartzkopffianum* Kraenzl., Notizbl. Bot. Gart. Mus. Berlin 13: 106 (1898) & in Engl., Pflanzenreich, Orch.-Mon.-Dendr. 45: 175 (1910). Type: New Britain: On trees in the Mangrove River near Ralum, F. Dahl s.n. (holo B†; iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; New Britain. Epiphyte in mangroves.

NOTES: Schlechter (1911-14) examined the type in the Berlin Herbarium before it was destroyed. The specimen was flowerless but with a note on the sheet 'flowers in alcohol'. Since this alcohol specimen could not be found, Schlechter was unable to illustrate or provide details of the species.

There is a specimen at CANB, collected in New Britain, Papua New Guinea that matches Kraenzlin's description, except for the smaller flowers, these being immature when the specimen was collected. The collection details on this specimen include notes on its habit "An epiphyte on beach *Calophyllum*", flower colour "flowers white with 5 caudate perianth parts; labellum cream, ciliate with orange basal portion" and used by the indigenous people "collected for fragrant flowers".

SPECIMENS EXAMINED: Papua New Guinea. New Britain; Koimumu village near Cape Hoskins, West Nakanai, 6 Aug. 1954, Floyd E 491 (CANB 110613).

163. *Grastidium schweinfurthianum* (Hawkes et Heller) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium schweinfurthianum* Hawkes et Heller, Lloydia 20: 123 (1957) nom.; *Dendrobium leopardinum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 578 (1912) & Fig. Atlas t. 192, f. 722 (1928), non Wall. (1824). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Finisterre Range, alt. 1000-1200 m, July 1980, R. Schlechter 18023 (holo B†; BO, G, L).

ILLUSTRATIONS: Schlechter (1928), t. 192, f. 722 - as *Dendrobium leopardinum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: Schlechter (1911-14) comments that "the bizarre flowers, with their much elongate sepals, are yellow with dark red spots and a white lip, the tip of the lateral lobes and margin of the middle lobe being dotted red".

164. *Grastidium setosum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 451 (1983).

Basionym: *Dendrobium setosum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 618-19 (1912) & Fig. Atlas t. 208, f. 786 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Jan. 1908, R. Schlechter 17249 (holo B†; iso AD, AMES!, BO, G, K!, L, NSW, S).

ILLUSTRATIONS: Schlechter (1928), t. 208, f. 786 - as *Dendrobium setosum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Schlechter (1911-14) states that "This species is one of the most peculiar which I brought back. The leaf-sheaths are so extremely uncommon for the genus, so that without flowers, I would never have considered it as a *Dendrobium*. It is interesting that both the above-described species [*D. erubescens* and *D. kenejianum*] are closely related. The flowers are greenish with the lip and column-foot orange-yellow".

165. *Grastidium sladei* (J.J. Wood et Cribb) M.A. Clem. et D.L. Jones, comb. nov. Fig. 6.

Basionym: *Dendrobium sladei* J.J. Wood et Cribb, Orchid Rev. 90: 14-16, f. 7, t. (1982). Type: 'Vanuatu, Efaté, Parsons Island in Vila Harbour', 26 Dec. 1906, E. Im Thum 330 (holo K!).

[*Dendrobium insigne* auct. non (Blume) Rchb.f.: Guillaumin, Cont. Fl. Nouv.-Heb. 2, Bull. Soc. Fr. 74: 693-712 (1927).]

ILLUSTRATIONS: Lewis & Cribb (1989), t. 5D - as *Dendrobium sladei*.

DISTRIBUTION AND ECOLOGY: Vanuatu; Efaté (endemic). Epiphyte in coastal forests and mangroves.

NOTES: Lewis and Cribb (1989), Kores (1989, 1991) and Cribb and Whistler (1996) are of the opinion that this species is widespread throughout Vanuatu, Fiji and Samoa. Our research on living plants collected in Vanuatu, and study of the type, has shown that *G. sladei* is in fact a narrow endemic on Efaté and collections from other areas are of closely related species.

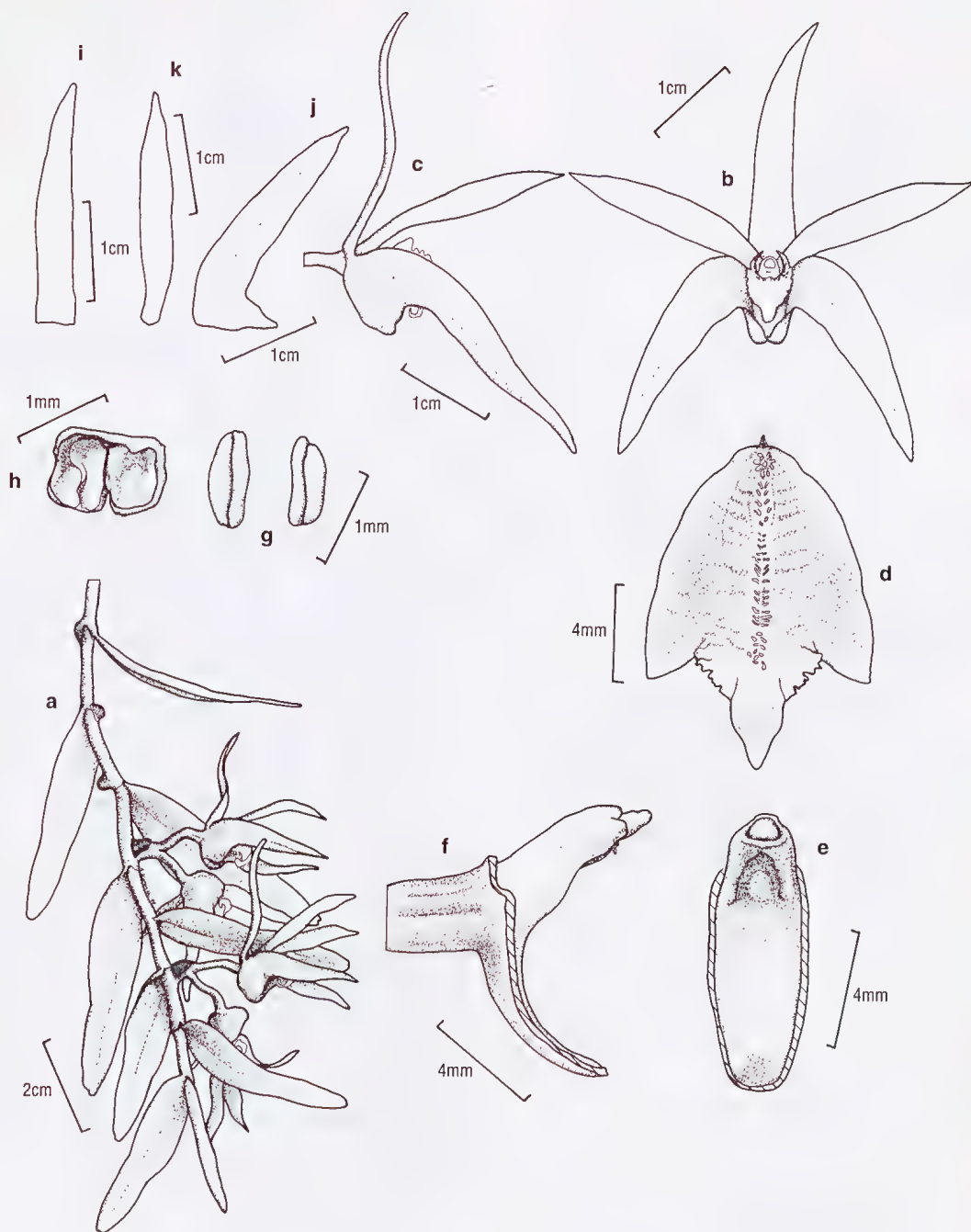


Figure 6. *Grastidium sladei*, La Lagon, Efaté, Vanuatu, Clements 7326: **a.** a flowering stem: **b.** flower from front: **c.** flower from side: **d.** flattened labellum from above: **e.** column from front: **f.** column from side: **g.** pollinia: **h.** anther from back: **i.** dorsal sepal: **j.** lateral sepal: **k.** petal (illustration by Elisa Crossing).

The flowers are yellow, the labellum with red lateral lobes and yellow-orange keel and a small orange spot at the apex of the column-foot.

SPECIMENS EXAMINED: Vanuatu, Efaté. cultivated ANBG 18 Dec. 1992, 8 Mar. 1993, 15 Mar. 1994 ex Port Vila 'Raiatea', 2 Dec. 1989, Slade (Clements 5638a) (CANB 8916280); cultivated ANBG, 18 Dec. 1992, 8 Mar. 1993, 28 Dec. 1993, 18 Apr. 1994 ex Club Hippique Lagoon, July 1991, Clements 5588a (CANB); cultivated ANBG, 26 Oct. 1990, 22 Mar. 1994 ex Club Hippique Lagoon, July 1991, Clements 5588b (CANB); cultivated ANBG, 12 Aug. 1991, 18 Feb. 1994, 14 Mar. 1994 ex La Lagoon, July 1991, Clements 7326 (CANB); cultivated ANBG, 30 Jan. 1993, 8 Mar. 1994, 15 Mar. 1994 ex Snake Hill, Clements 7332a (CANB); cultivated ANBG, 15 Mar. 1994 ex Snake Hill, Clements 7332b (CANB); cultivated ANBG, 15 Mar. 1993, 8 Mar. 1994, 15 Mar. 1994 ex Snake Hill, July 1991, Clements 7338a (CANB); cultivated ANBG, 18 Dec. 1990, 8 Mar. 1994, 15 Mar. 1994 ex Snake Hill, July 1991, Clements 7338b (CANB).

166. *Grastidium somai* (Hayata) Rauschert, Feddes Repert. 90(7-8): 452 (1983).

Basionym: *Dendrobium somai* Hayata, Icon. Pl. Formos. 6: 71-72 (1916). Type: 'Hab. in seminario Taihoku culta, leg. T. Soma, Aug. 1915' (holo TI).

Dendrobium baileyi auct. non. F. Muell.; Ying, Col. Illus. of Indig. Orch. Taiwan 1: 443 (1977).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Taiwan. Epiphyte in rainforest.

NOTES: "Near *D. furcatopedicellatum* Hayata, but differs by the smaller flowers with glabrous discs" (Hayata 1916).

167. *Grastidium sororium* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium sororium* Schltr., Repert. Spec. Nov. Regni Veg. 8: 504-505 (1910). Type: North Celebes; Minahassa; On solitary trees near Kakas, alt. c. 650 m, Dec. 1909, R. Schlechter 20603 (holo B†).

Dendrobium pruinoseum auct. non Teijsm. et Binnend.: Kraenzl. in Engl., Pflanzenreich, Orch.-Mon.-Dendr. 45: 197 (1910), pro parte.

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Sulawesi. Epiphyte in rainforest.

NOTES: Schlechter (1910) states that "*Dendrobium imbricatum* J.J. Smith from New Guinea, can be considered as the closest relative, but *D. pruinoseum* Teijsm. et Binnend. also stands close. Our plant, however, is well separated from both of these species by its flowers. The leaves and rhizomes of the whole plant are blue-green to brown-purple-green, the flowers are a pallid yellow".

168. *Grastidium steinii* (J.J. Smith) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium steinii* J.J. Smith, Bot. Jahrb. 66: 194-95 (1934). Type: Dutch New Guinea: Waigeo, Majalibit Bay, 12 June 1931, G. Stein 264 (holo BO).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Waigeo Island. Epiphyte in rainforest.

NOTES: The species is allied to *G. exaltatum*, but differs by a much narrower peduncle, non-elliptical leaves, differently shaped petals, much less distinct lateral lobes of the labellum, and a labellum-ridge lobed at the base. It is also allied to *G. macrostigma* from Ceram, but differs by the much broader leaves, pointed sepals, much smaller lateral lobes and a different labellum-ridge (Smith 1934).

169. *Grastidium stenophyllum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 453 (1983). **Fig. 7.**

Basionym: *Dendrobium stenophyllum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 614-15 (1912) & Fig. Atlas t. 207, f. 780 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range, alt. c. 1200 m, June 1909, R. Schlechter 19888 (holo B†); cultivated ANBG, 16 Mar. 1993 ex Papua New Guinea; Morobe Province, ridge N.E. of Garassa airstrip, alt. c. 600 m, 11 Apr. 1990, Clements 6797 (neo CANB 9013045; isoneo NCBG, here designated).

ILLUSTRATIONS: Schlechter (1928), t. 207, f. 780 - as *Dendrobium stenophyllum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Distinguished from allied species by its very narrow leaves. The flowers are yellowish white, the labellum marked with violet, the column-foot with a red spot and an orange-yellow callus (Schlechter 1911-14).

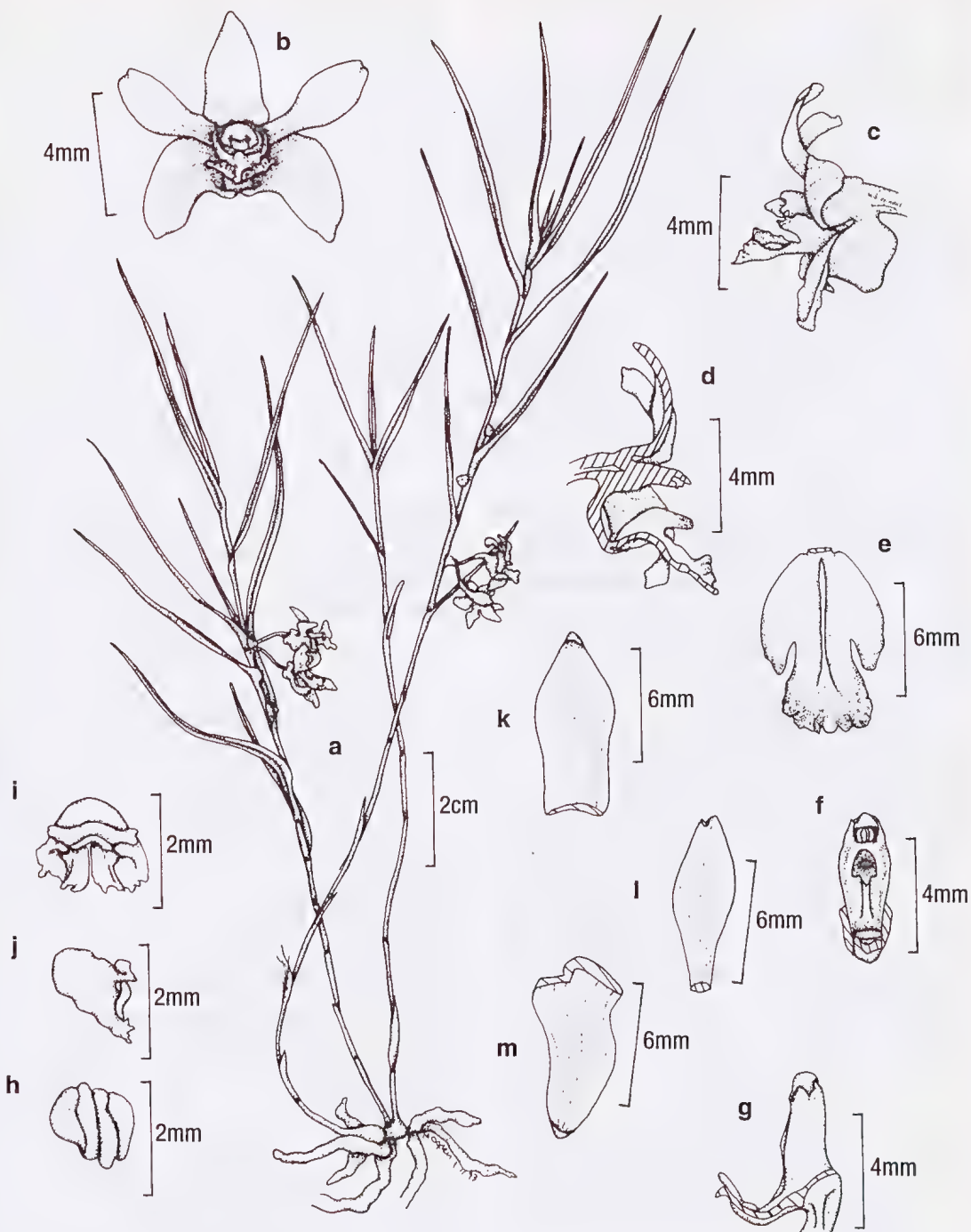


Figure 7. *Grastidium stenophyllum*, Garassa, Papua New Guinea, Clements 6797: **a.** plant: **b.** flower from front: **c.** flower from side: **d.** longitudinal section through flower: **e.** labellum, flattened: **f.** column from front: **g.** column from side: **h.** pollinia: **i.** anther from back: **j.** anther from side: **k.** dorsal sepal: **l.** petal: **m.** lateral sepal (illustration by Melissa Ogden).

SPECIMENS EXAMINED: cultivated ANBG, 19 Sep. 1994 ex Papua New Guinea; Morobe Province; ridge NE of Garassa airstrip, alt. c. 600 m, Apr. 1990, Clements 6797 (CANB 9013045).

170. *Grastidium straussianum* (Schltr.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium straussianum* Schltr., Orchis 92-93, t. 6, f. 16-21 (1915). Type: cultivated Berlin-Dahlem Botanic Gardens, 1914, Strauss ex Bismarck Archipelago, New Ireland, Peekel s.n. (holo B†; iso HBG!).

ILLUSTRATIONS: Schlechter (1915), t. 6, f. 16-21 - as *Dendrobium straussianum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; New Ireland. Epiphytic in coastal forests.

171. *Grastidium strictanthum* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium strictanthum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 593 (1912) & Fig. Atlas t. 198, f. 745 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 800 m, Sep. 1909, R. Schlechter 20185 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 198, f. 745 - as *Dendrobium strictanthum*; O'Byrne (1994), p. 329 - as *Dendrobium falcatum* (D528).

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest at moderate altitude.

NOTES: Schlechter (1911-14) considered this species to be closely allied to *D. violaceo-pictum* Schltr. but differing by its longer, much looser growth habit, the warts on the outside of the sepals, the labellum and column. The flowers are whitish, closely dotted with violet-red, column white and the column-foot is marked with a violet-red spot at the apex.

SPECIMENS EXAMINED: Papua New Guinea. West Sepik Prov; Lumi Dist; Sikel, Torricelli Mts., alt. c. 800 m, 23 July 1981, Reeve 3586 (CANB 9000270).

172. *Grastidium suaveolens* (Kraenzl.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium suaveolens* Kraenzl. in Engl., Pflanzenreich, Orch.-Mon.-Dendr. 45: 191 (1910), non Schltr. (1910). Type: Papuamische Provinz: Sorong, O. Beccari 241 (holo FI; iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia, Irian Jaya. Epiphyte in coastal forest.

NOTES: The flowers are white the labellum pale yellow, very fragrant with the odour of *Vanilla* or *Gardenia*.

173. *Grastidium subelobatum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium subelobatum* J.J. Smith, Nova Guinea 19: 414-15, t. 63, f. 67 (1932). Type: Dutch New Guinea: Epiphytical in forest in the northern part, Idenburg River, c. 400 m, 14 Sep. 1914, W. Feuilletau de Bruyn 105 (holo BO!).

ILLUSTRATIONS: Smith (1932), t. 63, f. 67 - as *Dendrobium subelobatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: Smith (1932) considered that this species was "nearest to *D. neuroglossum* Schltr. but with narrower and thicker leaves, differently coloured flowers, the lip with a much thicker keel, a much longer column-foot. The flowers are white."

174. *Grastidium subtricastatum* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium subtricastatum* J.J. Smith, Nova Guinea 19: 413-14, t. 63, f. 65 (1932). Types: Dutch New Guinea: In the northern part, mountain-ridge c. 70 km north of Carstensz-mountains, L.A.C. M. Doorman 30 & 31 (holo in alcohol BO!).

ILLUSTRATIONS: Smith (1932), t. 63, f. 65 - as *Dendrobium subtricastatum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in montane rainforest.

NOTES: The flowers are cream-coloured with yellow or brown tips, the labellum light yellow (Smith 1932).

175. *Grastidium summerhayesianum* (Hawkes et Heller) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium summerhayesianum* Hawkes et Heller, Lloydia 20: 124 (1957) nom.; *Dendrobium pictum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 595-96 (1912) & Fig. Atlas t. 199, f. 749 (1928), non Griff. ex Lindl. (1859), nec Lindl. (1862). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 600-700 m, Sep. 1909, R. Schlechter 20118 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 199, f. 749
- as *Dendrobium pictum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea and Indonesia; Irian Jaya. Epiphyte in montane rainforest.

NOTES: The flowers are brownish yellow with a dark violet labellum, the column white with a violet-margined callus (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG 17 Sep. 1994 ex Papua New Guinea; Madang Province; Nokopo village in the Finisterre Range, 19 Mar. 1990, Clements 5989 (CANB 9009931); cultivated ANBG 12 Sep. 1980 ex Papua New Guinea; Kassam Pass, alt. 1219 m, Searle [CBG 770846] (CANB 8006076).

176. *Grastidium torquisepalum* (Kraenzl) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium torquisepalum* Kraenzl. in Engl., *Plflanzenreich Orch.-Mon.-Dendr.* 1: 187 (1910). Type: Sudwestmalayische Provinz: Borneo, Sarawak, O. Beccari 1872 (holo FL; iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Malaysia; Sarawak. Epiphytic in rainforest.

NOTES: The type material at Hamburg (HBG) is only a flower in a packet and this is typical of many collections in the Kraenzlin herbarium which were returned to Hamburg from East Berlin (HBU) in 1990 (Christenson 1994). This particular specimen is part of the Beccari collection, the primary specimens in that collection being housed in Florence (FI). Since Kraenzlin's description includes details of the vegetative habit it must be assumed that Kraenzlin based his description on the material at FI and that the collection at HBG only represents a fragment taken from the material used in description. Therefore, the HBG collection is here interpreted as representing an isotype.

The flowers are dark brown the labellum cream coloured in the dried specimen.

177. *Grastidium toxopei* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 453 (1983).

Basionym: *Dendrobium toxopei* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 3) 9(3-4): 467-69 (1928). Type: Boeroe: Wa'Katin, 600 m, 26 Mar. 1921, L.J. Toxopeus 73 (holo BO!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Bura Island.

NOTES: Allied to *Dendrobium sacciferum* from Ternate but differing in the long linear claw on the labellum mid-lobe, a much shorter hypochile and a much more saccate column-foot (Smith 1928).

178. *Grastidium tozerense* (Lavarack) M.A. Clem. et D.L. Jones, Lasianthera 1: 18 (1996) (sic 'tozerensis').

Basionym: *Dendrobium tozerensis* Lavarack, Austrobaileya 1: 70, f. 5 (1977). Type: 'Tozer's Gap, Cape York Peninsula', 11 Aug. 1975, P.S. Lavarack 990 (holo & iso BRI!).

ILLUSTRATIONS: Lavarack & Gray (1985), t. 68, p. 127; Dockrill (1994), t. 95, p. 693 - both as *Dendrobium tozerensis*.

DISTRIBUTION AND ECOLOGY: Australia; Queensland; Cook District; Iron Range and McIlwraith Range, Cape York Peninsula. Epilith in lowland rainforest.

NOTES: In cultivation the flowers are frequently cleistogamous and often have three anthers, the two lateral ones being smaller and probably non-functional. The flowers are entirely white.

SPECIMENS EXAMINED: cultivated Brisbane 14 Jan 1980 ex Massey Creek, McIlwraith Range, 5 Sep. 1979, Lavarack s.n. (BRI 251557); cultivated ANBG 12 Feb. 1981 ex McIlwraith Range, Leo Creek, Lavarack s.n. (CANB 8100830); cultivated ANBG, 16 Dec. 1994, 7 Mar. 1995, 25 Oct. 1995 ex Tozer's Gap, 17 May 1989, Lavarack (Jones 4062) (CANB 8912864); Iron Range road, between Tozer's Gap and airport turn-off, 5 Sep. 1976, Wrigley 259 (CANB 8100829).

179. *Grastidium triangulum* (J.J. Smith) Rauschert, Feddes Rep. 94 (7-8): 453 (1983).

Basionym: *Dendrobium triangulum* J.J. Smith, Bull. Jard. Bot. Buitenzorg (ser. 2) 13: 65 (1914) & Nova Guinea 12(4): 314, t. 113, f. 207 (1916). Type: Dutch New Guinea: East coast of Geelvink Bay, on the Giriwo River, epiphytic in forest, July 1912, R.F. Janowsky 107 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 113, f. 207 - as *Dendrobium triangulum*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.



NOTES: This species, is another member of the group which includes *Dendrobium erubescens*, *D. kenejianum* and *D. setosum*, all having the growth habit like that of *Monanthos*. It is closely allied to *D. kenejianum* differing in the smaller leaves, a labellum with strong, thick longitudinal, blunt ridge, lateral lobes with transverse growths on the inside, and a triangular central segment on the mid-lobe. The flowers are yellow (Smith 1916).

180. *Grastidium trichosepalum* (A. Gilli) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium trichosepalum* A. Gilli, Ann. Naturhist. Mus. Wien 84: 30, f. 19 (1983). Type: Papua New Guinea; Western Highlands, Wald westlich von Laiagam, alt. c. 2950 m, in großer Höhe als Epiphyt von den Bäumen herabhängend, 12 Feb. 1974, A. Gilli 479 (holo W!).

ILLUSTRATIONS: Gilli (1984), f. - as *Dendrobium trichosepalum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte or terrestrial in montane forests or grasslands.

NOTES: The flowers are white (Gilli 1983).

181. *Grastidium tridentiferum* (Lindl.) Rauschert, Feddes Rep. 94 (7-8): 453 (1983).

Basionym: *Dendrobium tridentiferum* Lindl., J. Bot. 2: 237 (1843). Type: New Guinea, R.B. Hinds s.n. (holo K-L!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea, probably from Bougainville, and the Solomon Islands. Epiphyte in lowland or coastal rainforests.

NOTES: The type specimen of *Dendrobium tridentiferum*, at Kew, consists of part of a stem with leaves, a flower, and an illustration of an opened flower. Schlechter (1911-14) overlooked this name in his treatment of *Dendrobium* sect. *Grastidium*.

182. *Grastidium trigonellodorum* (Kraenzl.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium trigonellodorum* Kraenzl. in Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 186 (1910). Type: Papuanische Provinz: Neu-Guinea, Kaiser Wilhelmsland, W. Micholitz s.n. (holo & iso HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: When describing this new species Kraenzlin (1910) likened it to *D. revolutum* Lindl., a species which belongs to *Dendrobium* sect. *Distichophyllum* Hook.f.

183. *Grastidium trilobulatum* (Kores) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium trilobulatum* Kores, Allertonia 5(1): 91-92 (1989). Type: Fiji; Viti Levu; in hills bordering Wainavindrau Creek near Wainimakutu, Namosi Province, , 8 Oct. 1953, A.C. Smith 8882 (holo & iso BISH).

ILLUSTRATIONS: Kores (1991), f. 56H-Q - as *Dendrobium trilobulatum*.

DISTRIBUTION AND ECOLOGY: Fiji. A pendulous epiphyte in lowland rainforest at an altitude of c. 100-250 m.

NOTES: This, one of six species of *Grastidium* recorded for Fiji, is easily distinguished by the broad, oblong-lanceolate leaves, the obreniform, blade-like labellum mid-lobe and broadly trilobate apex of the labellum. The flowers are white or yellow (Kores 1989).

184. *Grastidium triste* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium triste* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 589-90 (1912) & Fig. Atlas t. 197, f. 740 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 900 m, Sep. 1909, R. Schlechter 20246 (holo B†; iso AD, AMES!, BO!, E, G, K!, L, NSW!).

ILLUSTRATIONS: Schlechter (1928), t. 197, f. 740 - as *Dendrobium triste*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest moderate altitude.

NOTES: Allied to *Dendrobium pachyanthum* Schltr. (= *G. katherinae*) but differing in the shape of the labellum. The flowers are dark purple with an orange-yellow crest on the labellum, the white column flushed reddish, and with an orange-yellow spot on the apex (Schlechter 1911-14).

185. *Grastidium truncicola* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 453 (1983).

Basionym: *Dendrobium truncicola* Schltr., Repert. Spec. Nov. Regni Veg. 10: 81 (1911). Type: North

Celebes; Minahassa; on tree trunks on the hills near Lansot, alt. c. 700 m, Dec. 1909, R. Schlechter 20630 (holo B†).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Sulawesi. Epiphyte in rainforest at moderate altitude.

NOTES: Schlechter (1911b) noted that this "species grows only on thick tree-trunks in relatively open terrain, usually at about 3-4 m above the ground. It represents a second example of the close relationship to certain species from the Malayan Archipelago, but which nevertheless must rightly be considered as existing side by side. Whilst *D. imitans* Schltr., which often grows in company with it, approximates closely to the Javanese *D. acuminatissimum* Bl., even though it differs altogether in the labellum". He later considered it allied to *D. acuminatissimum* but differing in the shape of the labellum. The flowers are whitish, at times lightly suffused rose-red (Schlechter 1925).

186. *Grastidium vandoides* (Schltr.) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 653 (1981).

Basionym: *Dendrobium vandoides* Schltr., Repert. Spec. Nov. Regni Veg, Beih. 1: 603-604 (1912) & Fig. Atlas t. 203, f. 763 (1928). Type: Kaiser-Wilhelms-Land: On the trees in the forests of the Kani Range, alt. c. 400 m, Oct. 1907, R. Schlechter 16694 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 203, f. 763; O'Byrne (1994), p. 355, t. 19 lower plate labelled D930 - both as *Dendrobium vandoides*.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya and Papua New Guinea. Epiphyte in coastal forest, swamps, and primary rainforest from sea level to c. 400 m.

NOTES: A very distinctive species with the characteristic habit of a large *Vanda*. O'Byrne (1994) reports that it often forms large clumps on horizontal tree limbs in gallery forests, often overhanging water. The flowers are pale yellowish, red dotted, and spotted inside (Schlechter 1911-14).

187. *Grastidium vanderwateri* (Ridl.) Rauschert, Feddes Rep. 94 (7-8): 453 (1983).

Basionym: *Dendrobium vanderwateri* Ridl., Trans. Linn. Soc., Bot. 9: 166 (1916). Type: Dutch New

Guinea: Utakwa River, Camp VIa, 3100 ft., 20 Jan 1913, C. Boden Kloss s.n. (holo BM!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Indonesia; Irian Jaya. Epiphyte in rainforest.

NOTES: This species is allied to *Dendrobium biflorum*, resembling it in habit (Ridley 1916).

188. *Grastidium vanikorenses* (Ames) Rauschert, Feddes Repert. 94(7-8): 453 (1983).

Basionym: *Dendrobium vanikorenses* Ames, J. Arn. Arb. 13: 134 (1932). Type: 'Santa Cruz Group: Vanikoro, common in rainforest at 50 m.', 28 Nov. 1928, S.F. Kajewski 663 (holo AMES!).

[*Dendrobium biflorum* auct non G. Forst.: B.A. Lewis et P.J. Cribb, Orch. Vanuatu 117 (1989)].

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Vanuatu; Vanikoro. A pendulous epiphyte in coastal rainforest.

NOTES: "In general habit this species resembles *D. acuminatissimum* Lindl. from which it differs chiefly in having a simple lip" (Ames 1932). Ames also considered the new species was allied to *D. indragiriense* and *D. holochilum* but differing in vegetative and floral morphology. The flowers are creamy yellow, tinged with purple.

189. *Grastidium vernicosum* (Schltr.) Rauschert, Feddes Repert. 94(7-8): 453 (1983).

Basionym: *Dendrobium vernicosum* Schltr., Repert. Spec. Nov. Regni Veg, Beih. 1: 579-80 (1912) & Fig. Atlas t. 193, f. 724 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1100 m, Jan. 1908, R. Schlechter 17197 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 193, f. 724 - as *Dendrobium vernicosum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: Allied to *Dendrobium pantherinum* Schltr. but distinguished by the closely set leaves glistening on the upper surface as though coated with gum or varnish. The flowers are snow-white, the labellum and column brownish yellow at the base (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 19 Apr. 1994 ex Papua New Guinea; Morobe Province; hills



behind Garassa, alt. c. 500 m, 6 Apr. 1990, Clements 6410 (CANB 9012868).

190. *Grastidium verruciflorum* (Schltr.) Rauschert, Feddes Repert. 94(7-8): 453 (1983). **Fig. 8.**

Basionym: *Dendrobium verruciflorum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 602-3 (1912) & Fig. Atlas t. 202, f. 761 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests on the Djamu [River], alt. c. 300 m, Nov. 1907, R. Schlechter 16887 (holo B†).

ILLUSTRATIONS: Schlechter (1928), t. 202, f. 761 - as *Dendrobium verruciflorum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are brown outside, whitish inside (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG 20 Dec. 1994 ex Papua New Guinea; Morobe Prov; hills behind Garassa, alt. c. 450 m, Apr. 1990, Clements 6413 (CANB 9012871).

191. *Grastidium violaceopictum* (Schltr.) Rauschert, Feddes Repert. 94(7-8): 453 (1983).

Basionym: *Dendrobium violaceo-pictum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 592-93 (1912) & Fig. Atlas t. 198, f. 744 (1928). Type: Kaiser-Wilhelms-

Land: On trees in the forests of the Ibo Range, alt. c. 1200 m, Dec. 1907, R. Schlechter 17079 (holo B†; iso AD, AMES!, BO!, G, NSW).

ILLUSTRATIONS: Schlechter (1928), t. 198, f. 744 - as *Dendrobium violaceo-pictum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is allied to *Dendrobium incurvatum* Schltr. and *D. stictanthum* Schltr. but easily recognised by differences in the labellum. The flowers are white, closely spotted and dotted violet-red, with a white column (Schlechter 1911-14).

192. *Grastidium xylophyllum* (Kraenzl.) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium xylophyllum* Kraenzl. in Engl., Pflanzenreich, Orch.-Mon.-Dendr. 45: 191-92 (1910). Type: Papuanische Provinz: Neu-guinea, Cape Frere, Rev. Copland King s.n. (holo HBG!).

ILLUSTRATIONS: None found.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: The flowers are pale yellow.

subgenus *Dichopus* (Blume) M.A. Clem. et D.L. Jones, comb. et stat. nov.

Basionym: *Dichopus* Blume, Mus. Bat. 2: 176 (1856). Type species: *Dichopus insignis* Blume.

Dendrobium Sw. sect. *Dichopus* (Blume) Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 450 (1912). Subgenus *Dichopus*, which is monospecific, is distributed from Ceram to the Solomon Islands.

Subgenus *Dichopus* is separated from subgenus *Grastidium* by the following key characters:-

- 1) leaves pseudodimorphic, proximal leaves larger, ovate-obovate, distal leaves small, ovate to linear;
- 2) flowers last 2-3 days;
- 3) stigma with a basal appendage;
- 4) large seed capsule;
- 5) large seed;
- 6) embryo globular, with single elongate, inflated suspensor.

193. *Grastidium insigne* (Blume) M.A. Clem. et D.L. Jones, comb. nov. **Fig. 9.**

Basionym: *Dichopus insignis* Blume, Mus. Bat. 3: 640 (1859); *Dendrobium insigne* (Blume) Rchb.f. ex Miq., Fl. Ind. Bat. 3: 640 (1859). Type: New Guinea, Zeppelius s.n. (holo L!).

Dendrobium gazellae Kraenzl., Bot. Jahrb. Syst. 7: 436-37 (1886). Type: 'Ins. Neu-Guinea, in parte occid., Segaar-Bay in sinu Mc.Cleur-Bay, in densis silvis montanis', 17 June 1875, Naumann s.n. (holo B†).

Dendrobium lyperanthiflorum Kraenzl., Ost. Bot. Zurich 44: 333 (1894) & Engl., Pflanzenreich Orch.-Mon.-Dendr. 1: 198, f. 14A-C (1910); *Grastidium lyperanthiflorum* (Kraenzl.) Rauschert, Feddes Repert. 94(7-8): 450 (1983). Type: New Guinea: New Britain, In the Bay at Port Weber, Dec. 1893, Micholitz s.n. (holo HBG!; iso BO!).

Dendrobium pentactis Kraenzl. in Engl., Pflanzenreich, Orch.-Mon.-Dendr. 45: 200 (1910). Type: Papuanische Provinz: Aru-Inseln, O. Beccari s.n. (holo FI; iso HBG!).

Dichopus insignis Blume var. *subsimplex* J.J. Smith, Nova Guinea 8(1): 564-65, t. 92B (1911). Type:

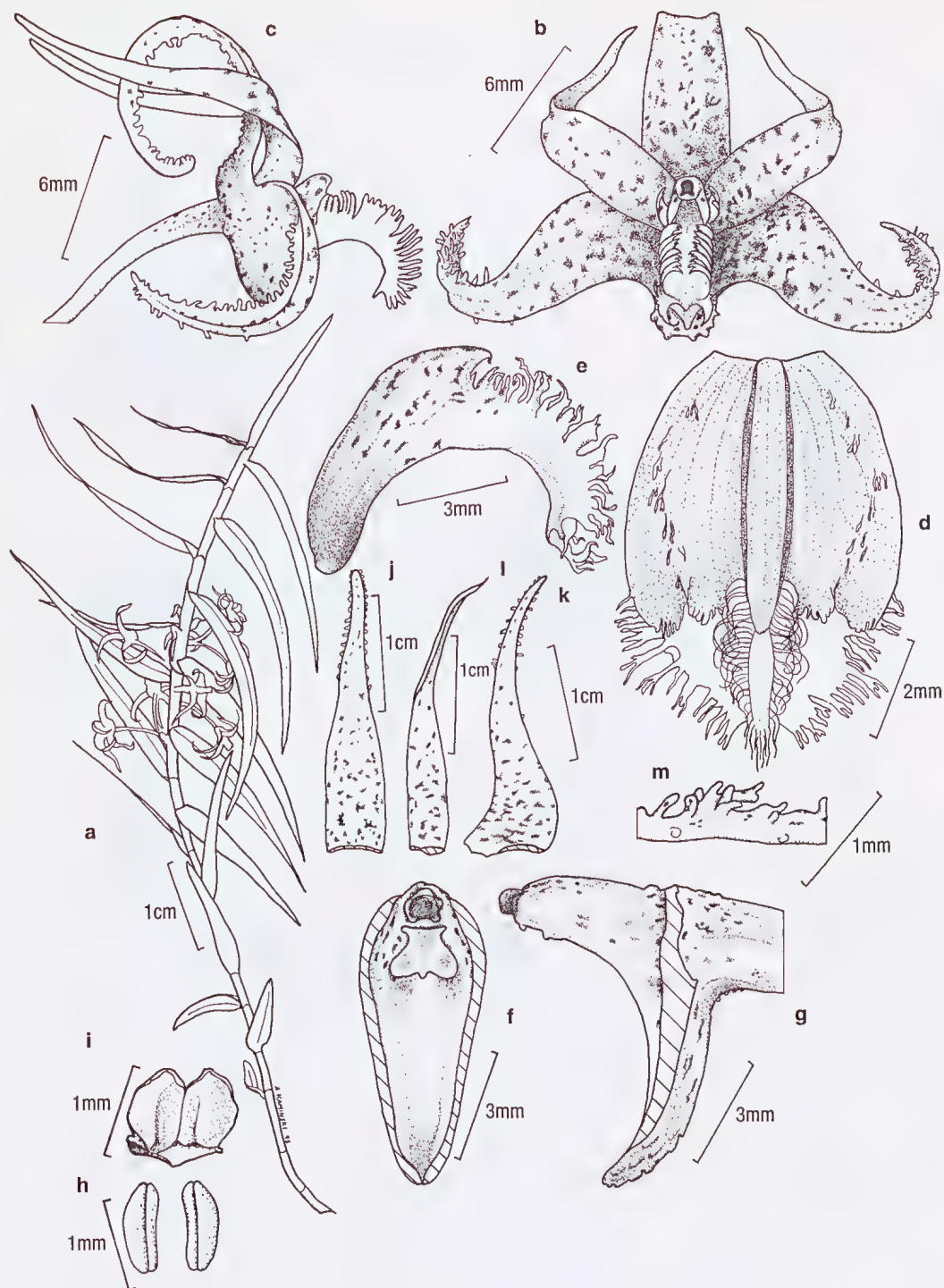


Figure 8. *Grastidium verruciflorum*, Garassa, Papua New Guinea, Clements 6413: **a.** flowering cane: **b.** flower from front: **c.** flower from side: **d.** labellum from above, flattened: **e.** labellum from side **f.** column from front: **g.** column from side: **h.** pollinia: **i.** anther from above: **j.** dorsal sepal: **k.** lateral sepal: **l.** petal: **m.** ornamentation on the sepals (illustration by Andrew Kaminski).

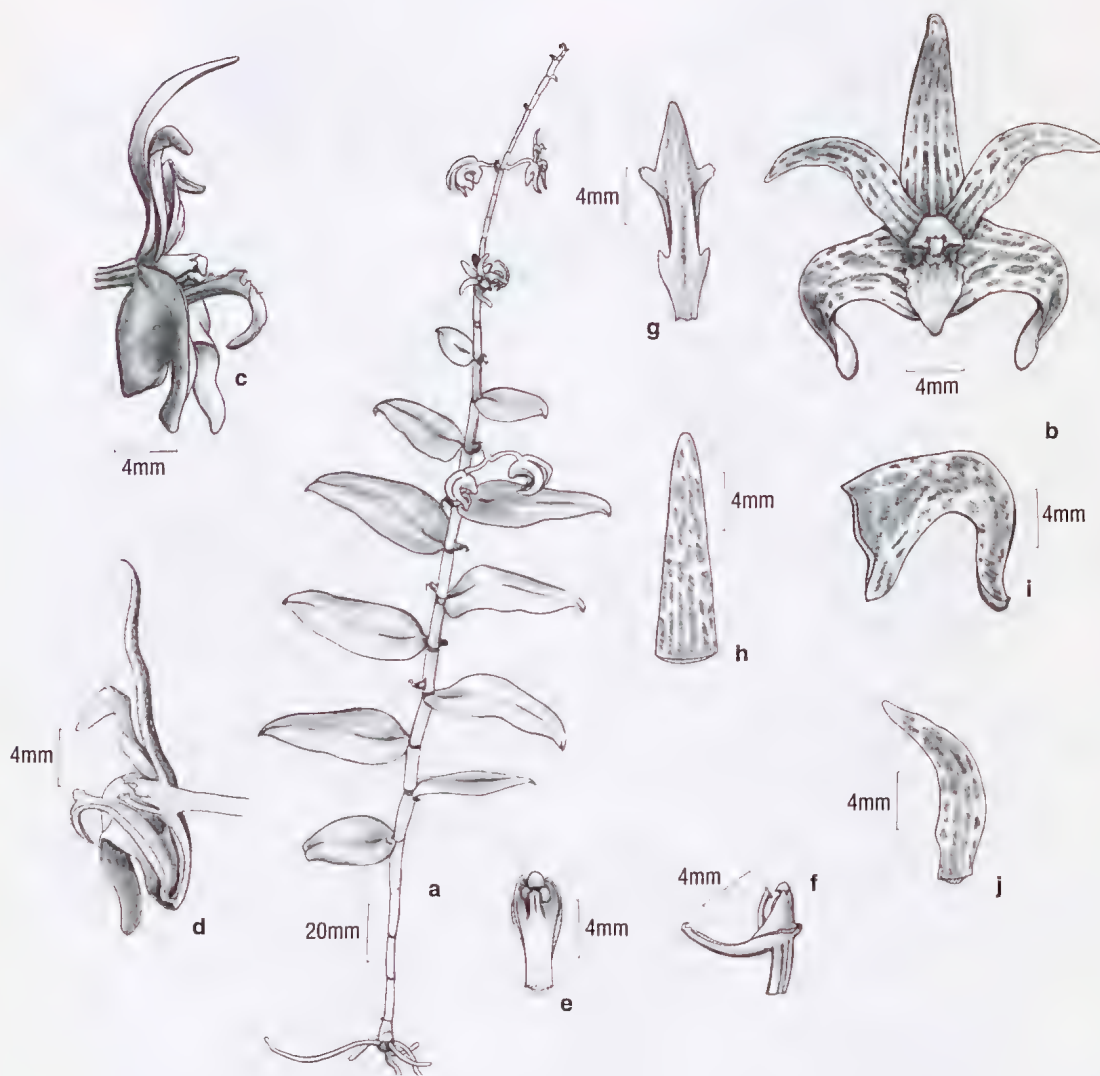


Figure 9. *Grastidium insigne*, cultivated ANBG ex Saibai Island, Torres Strait, Australia, Stocker s.n.: **a.** plant: **b.** flower from front: **c.** flower from side: **d.** longitudinal section through flower: **e.** column from front: **f.** column from side: **g.** labellum, flattened: **h.** dorsal sepal: **i.** lateral sepal: **j.** petal (illustration by Robin Hill).

cult. Batavia ex Nijman, Frau M. Viator Sibinga [199] (holo BO!; iso L!).

Dendrobium consanguineum J.J. Smith, Philipp. J. Sci., Bot. 12: 256-57 (1917). Types: Amboina, Wakal, at sea level, 5 Nov. 1913, *Reliquiae Robinsonianae* 1630, 1624 (syn BO!), *syn. nov.*

ILLUSTRATIONS: Dodd (1977), p. 105; Millar (1978), p. 34 top LHS; Peekel (1984), f. 182; Lavarack and Gray (1985), t. 67 & p. 125; O'Byrne (1994), p. 323 - all as *Dendrobium insigne*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea, Solomon Islands, Australia (Saibai Island, Torres Strait) and Indonesia; Irian Jaya, Ambon, Aru Islands. Epiphyte in coastal forests and on mangroves.

NOTES: Listed as occurring in Vanuatu by Lewis and Cribb (1989) based on Guillaumin's interpretation of specimens, one of which however (*Im Thum* 330) was erroneous as it is the holotype of *Dendrobium sladei* J.J. Wood & Cribb.

Schlechter (1911-14) and O'Byrne (1994) list *Dendrobium obcuneatum* as a synonym of *Dichopus insignis*, but based on a study of the type of that species, it is allied to *Grastidium luteocilium*.

Smith (1909) and Schlechter (1911-14) after studying the types of *Dendrobium lyperanthiflorum*, *D. gazellae* and *D. pentactis* considered these species conspecific with the widespread *Dichopus insignis*. Clements (1989) disagreed with this interpretation of the status of these species but the results of recent research, especially that pertaining to the unusual genetics of this genus, supports the earlier authors claims. *Dendrobium consanguineum* would also appear to represent an example of a small-flowered form of this species and is here treated as a synonym pending further research.

The flowers are dull creamy-yellow with orange markings and a white labellum.

SPECIMENS EXAMINED: Papua New Guinea. E. Sepik Prov; Kairiru Isl., [1988], Borrell 337 (CANB 00484676); Central Prov; Kanosia, 31 Jan. 1935, Carr 10002 (CANB 59637); Madang Province; road to CRI, c. 12 km N of Madang, alt. c. 2-5 m, 12 Mar. 1990, Clements 5852 (CANB 9009190); cultivated ANBG 14 Mar. 1994 ex Madang Province; village area of Riwo, 5 May 1990, Clements 7288 (CANB 9013537); Milne Bay Province; 5 km

from junction of Watubo, Magi Highway, Alotau Subprovince, alt. c. 60 m, epiphyte on *Pandanus*, 7 Mar. 1984, Gideon 77067 (K); New Ireland; Rabaul, Botanic Gardens, on *Calophyllum*, alt. 250 ft, 1932, Hanson 5 (K); Northern Division; Popondetta, alt. c. 100 m, 1 Sept. 1953, (K); E. Sepik District; S of Ambuntim along Tiyyangarum (Black River), alt. c. 50 m, 21 June 1966, Hoogland & Craven 10328 (CANB 170543, K); Bougainville; Kieta Subdistrict; Arawa Plantation, alt. 50 ft., 9 Apr. 1970, Millar & Vanderberg NGF 48511 (CANB 222639); Kaiser-Wilhelms-Land: On trees at forest borders on the Kenejia [River], alt. 150 m, Oct. 1908, Schlechter 18387 (NSW); Waria River, Dec. 1909, Schlechter 19943 (K, NSW).

Australia. cultivated ANBG, 31 Oct. 1989 ex Queensland; Torres Strait, Saibai Island, Stocker (CANB 8203468); cultivated ANBG, 6 Nov. 1991 ex CANB 8203468 ex Queensland; Torres Strait, Saibai Island, Stocker (CANB 8501537).

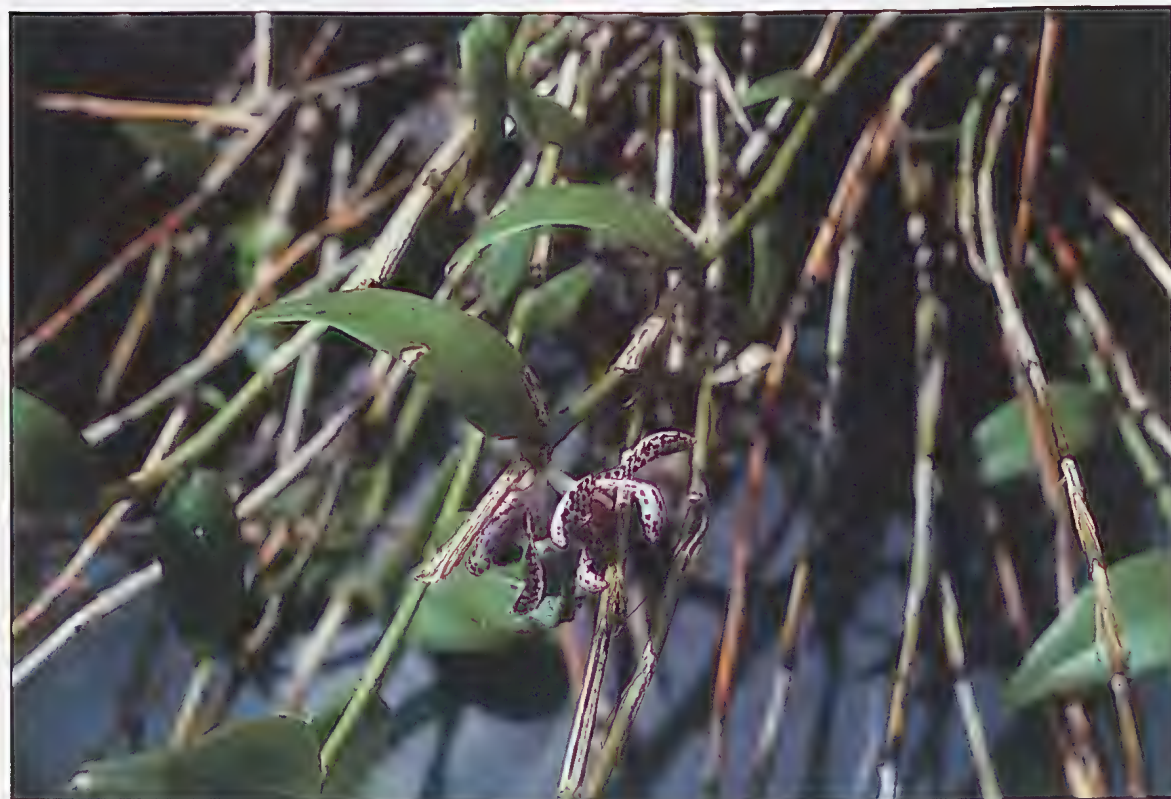
GENETICS AND BIOLOGY

Grastidium subgen. *Dichopus* also has peculiar genetic characteristics which are not known to exist in any other group within the *Dendrobieae*, and especially not in *Grastidium*. Two species and one variety of *Dichopus* have been described from throughout its range, but these all appear to be representative of the *Grastidium insigne*. Cultivated plants raised from seed obtained from a single seed capsule collected on Saibai Island in Torres Strait (G. Stocker pers. comm.), the only collection of this species in Australian territory, developed normally to produce large, freely opening flowers with a highly ornate labellum having numerous trichomes and marginal horns. Sibling crosses from this single collection produced progeny which had flowers $\frac{3}{4}$ the size of the parents, with a narrower and much less ornate labellum. Further crossing between these second generation plants produced even smaller flowers with an almost entire labellum. These plants are remarkably similar to the form of the species commonly encountered along the northern coast of Papua New Guinea and to those described by J.J. Smith as variety *subsimplex*. These smaller flowered forms of the species appear frequently to be cleistogamous, a characteristic not exhibited by the original seedlings. The occurrence of this unusual genetic phenomenon in *Dichopus*, is not easily explained and nor can it be accounted for in the





25. *Grastidium stenophyllum*, Clements 6797



26. *Grastidium strictanthum*, O'Byrne D528



27. *Grastidium summerhayesianum*, CANB 770846



28. *Grastidium tozerense*, Jones 4062





29. *Grastidium vernicosum*, Clements 6410



30. *Grastidium verruciflorum*, Clements 6413



31. *Grastidium insigne*, CANB 8501537



32. *Eriopexis helleriana*, Clements 5927

present nomenclatural system. As a consequence of these results, the named varieties of *D. insignis* will be treated as synonyms.

Benzing and Clements (1991) reported that the seeds were dispersed by the ant *Iridomyrmex cordatus* in Papua New Guinea in Coconut Palm plantations. The large seed size coupled with these observations suggests that unlike other related genera, where seed dispersal is primarily by wind, ants are responsible for at least local dispersal. All these factors have lead us to the conclusion that this species should be treated as a separate subgenus.

ERIOPEXIS

Eriopexis (Schltr.) Brieger in Schltr., Die Orchideen 3, Aufl. 1: 656 (1981).

Basionym: *Dendrobium* Sw. subgen. *Xerobium* Schltr. sect. *Eriopexis* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 450 (1912). Type species: *Dendrobium eriopexis* Schltr., fide Schlechter (1911-14) (= *Eriopexis schlechteri* Brieger).

Description

Epiphytic herb, sympodial. **Roots** creeping, filiform, fleshy, terete, much-branched. **Stems** slender and undifferentiated, laterally flattened, cane-like, indeterminate or nearly so. **Leaves** one per node, alternate, distichously arranged; sheathing base flattened, encircling the stem; lamina sessile, fleshy, thick textured, twisted at the base and aligned in a flate plane more or less level with the stem, apex unequally emarginate. **Inflorescence** lateral, at right angles to the stem, arising at a node opposite a leaf lamina, subtended by paired, hyaline, laterally compressed sheaths, which burst through a node and sheathing base, consisting of a short peduncle with geminate apical flowers opening together and facing outwards; flowering synchronous. **Flowers** resupinate, large, fleshy, shiny; the tepals forming a corolla, the apices opening tardily; creamy-white or white, ephemeral. **Dorsal sepal**, dissimilar in shape and size to lateral sepals. **Lateral sepals** united basally to each other and to the column foot forming a long curved mentum, equal to or larger than the dorsal sepal. **Petals** ovate to obovate, erect and spreading. **Labellum** almost entirely enclosed within the corolla, proportionally small and thin textured, hinged to the apex of the column foot; lamina 3-lobed; lateral lobes erect towards the column, entire,

minutely fimbriate, crenulate and usually with two lobes near the based of the mid-lobe; mid-lobe porrect or recurved, entire. **Lamina callus** variable, consisting of thickened central ridges, hairs or raised papillae, often breaking up distally into irregular calli or excrescences. **Column** broad, fused completely; column wings fused to the column, the apical extensions reduced to teeth which flank the anther. **Column foot** longer than the column, curved, often with coloured apical patch or coloured apical excrescences. **Anther** incumbent. **Pollinia** 4, waxy. Stigma entire, deeply sunken. **Rostellum** superficial, ventral. **Capsule** ovate to almost globular, lacking ornamentation, dehiscent by slits. **Protocorm** large, discoid-conical, the primary roots arising from stem nodes. **Fig. 10.**

Eriopexis is separated from *Grastidium* by the following key characters:-

- 1) stems and sheathing bracts strongly flattened;
- 2) origin of inflorescence not evident until flowering;
- 3) inflorescences emerging from hyaline bracts from a node opposite a leaf lamina and breaking through its sheath;
- 4) flowers facing outwards;
- 5) labellum enclosed within the tepals;
- 6) column foot very long and curved, together with the lateral sepals forming a broad saccate base to the flower.

194. *Eriopexis acanthophippiiflora* (J.J. Smith) M.A. Clem. et D.L. Jones, comb. nov.

Basionym: *Dendrobium acanthophippiiflorum* J.J. Smith, Meded. Rijks-Herb. (Leiden) No. 23: 10 (1915) & Nova Guinea 12(4): 315-316, t. 114, f. 208 (1916). Type: Dutch New Guinea: Geelvink Bay, Jabi Range, near Wape, epiphytic in forest, June 1913, R.F. Janowsky 401 (holo BO!).

ILLUSTRATIONS: Smith (1916), t. 114, f. 208 - as *Dendrobium acanthophippiiflorum*.

DISTRIBUTION AND ECOLOGY: Irian Jaya. Epiphyte in rainforest.

NOTES: This species is allied to *D. quinquelobatum* Schltr., but is distinguished by the labellum. The flowers are white, with a red margin to the labellum (Smith 1916).





Figure 10. *Eriopexis helleriana*, Karkar Island, Papua New Guinea, Clements 5927: a. part of a plant: b. flower from front: c. flower from side: d. longitudinal section through flower: e. labellum, flattened: f. column from front: g. column from side: h. pollinia: i. anther from top. j. dorsal sepal: k. lateral sepal: l. petal (illustration by Robin Hill).

195. *Eriopexis globiflora* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium globiflorum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 621 (1912) & Fig. Atlas, t. 209, f. 789 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Jan. 1908, R. Schlechter 17141 (holo B †; AMES!, BO!, E, G, K!, L, MO, NSW!, S).

ILLUSTRATIONS: Schlechter (1928), t. 209, f. 789 - as *Dendrobium globiflorum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is distinguished by the tripartite mid-lobe of the labellum, almost the wholly covered with pointed hair-like papillae, and the column-foot conspicuously narrowed towards the front. The flowers are white, the papillae at the base of the labellum orange-red and the column yellow with a darker striped foot (Schlechter 1911-14).

196. *Eriopexis helleriana* (Hawkes) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium hellerianum* Hawkes, Lloydia 20: 120 (1957), nom.; *Dendrobium inflatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 620 (1912) & Fig. Atlas, t. 209, f. 788 (1928), nom. illeg., non Rolfe (1895); Type: Kaiser-Wilhelms-Land: On trees in the forests of the Dischore Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19885 (holo B †).

ILLUSTRATIONS: Schlechter (1928), t. 209, f. 788 - as *Dendrobium inflatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: This species is allied to *Dendrobium eriopexis* (= *E. schlechteri*) but is distinguished by shorter leaves, larger flowers, hairiness and shape of the labellum and a shallowly concave column-foot. The flowers of white, tinted slightly pink inside, the mentum with lemon-yellow warts inside, the bearded papillae at the base of the labellum orange-red, and a yellow column with an orange-yellow column-foot (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 11 Sep. 1991 ex Papua New Guinea; Madang Province; Karkar Island, alt. c. 800 m, Clements 5927, Ziesing, Dauncey and Benzing (CANB 9009265).

197. *Eriopexis quinquelobata* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium quinquelobatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 622-23 (1912) & Fig. Atlas, t. 210, f. 791 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Maboro Range (Waria District), alt. c. 1200 m, June 1909, R. Schlechter 19869 (holo B †).

ILLUSTRATIONS: Schlechter (1928), t. 210, f. 791 - as *Dendrobium quinquelobatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in montane rainforest.

NOTES: This species is distinguished by a labellum with five lobes and the large, broad transverse tubercles on the upper surface. The flowers are salmon-coloured, the mid-lobe of the labellum pale cinnabar-red and column-foot with a cinnabar-red apical callus (Schlechter 1911-14).

198. *Eriopexis schlechteri* Brieg. in Schltr., Die Orchideen 3, Aufl. 1: 656 (1981).

Basionym: *Dendrobium eriopexis* Schltr. in K. Schum. et Laut., Fl. Schutzg. Sudsee, Nachtr. 170 (1905); Repert. Spec. Nov. Regni Veg., Beih. 1: 620 (1912) & Fig. Atlas, t. 209, f. 787 (1928). Type: New-Mecklenburg: On trees in the mountain forests of Punam (Rössel) Range, alt. c. 600 m, July 1905, R. Schlechter 14650 (holo B †; iso BM!, BO!, K!, P!).

ILLUSTRATIONS: Schlechter (1928), t. 209, f. 787 - as *Dendrobium eriopexis*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea; New Ireland. Epiphyte in dense rainforest, at moderate altitude.

NOTES: This species is distinguished by the slightly longer leaves, the petals narrower towards the base, and a sharply defined, hairy cushion extending along the entire centre of the labellum. The flowers are white with a golden yellow column-foot (Schlechter 1911-14).

199. *Eriopexis subpetiolata* (Schltr.) Rauschert, Feddes Repert. 90(7-8): 447 (1983).

Basionym: *Dendrobium subpetiolatum* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 621-22 (1912) & Fig. Atlas, t. 209, f. 790 (1928). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Torricelli Range, alt. c. 800 m, Sep. 1908 [1909], R. Schlechter 20208 (holo B †; iso AMES!, BO!, E, G, K!, L, NSW).



ILLUSTRATIONS: Schlechter (1928), t. 209, f. 790
- as *Dendrobium subpetiolatum*.

DISTRIBUTION AND ECOLOGY: Papua New Guinea. Epiphyte in rainforest.

NOTES: This species is the smallest in the subgenus, the labellum with a sparse short papillae and a tripartite mid-lobe, small, rounded lateral lobes and a large, broad and pointed mid-lobe. The flowers are white, flushed with pink externally, a white labellum with brown lateral laciniae on the mid-lobe, the column-foot orange-yellow at the apex (Schlechter 1911-14).

SPECIMENS EXAMINED: cultivated ANBG, 22 Nov. 1989 ex Papua New Guinea; Owen Stanley Range, Daga District, Agaun, Mt. Duau, alt. c. 1700 m, P. Spence & J. Jennese s.n. (CANB 7901420).

DOUBTFUL OR EXCLUDED TAXA

Dendrobium amblyornidis Rchb.f., Gard. Chron. 299 (1878). Type: New Guinea: Mount Arfak, 1872, O. Beccari (holo FI; iso WI).

NOTES: "It is bushy in habit, has strong though thin branches, and lanceolate acuminate leaves. The flowers are by no means pretty. They are small and insignificant, and would be considered ugly by a modern amateur, though their reflexed lateral sepals, the cuneate oblong two-keeled lip, and the slender column are very remarkable and interesting to the botanist". At Kew the original description is included in a folder with other *Grastidium* species. At Wien the material is sterile and like that of a *Monanthos*.

Grastidium nhatrangense (Gagnep.) Rauschert, Feddes Repert. 90(7-8): 451 (1983); *Dendrobium nhatrangense* Gagnep., Bull. Mus. Hist. Nat. (Paris) (ser. 2) 2: 237-38 (1930). Type: 'Indo-Chine: Annam: n. de Ninh-hoa, versant S.E. de massif de la Mère et l'Enfant, prov. Nhatrang', Poilane [6508]. (holo P; illust. K!).

NOTES: Gagnepain treat this species as belonging to *Dendrobium* subgen. *Grastidium* sect. *Angustifolium*, comparing it with *D. cathcartii* by the flowers arising from a leafless part of the stem; leaves acuminate, not lobed at apices; flowers rose coloured; labellum not oblong-lanceolate and fleshy in the centre; stielidia acuminate flexuose. However, the inflorescence comprises a solitary flower and there is no mention of the presence of indurate bracts. At

Kew there is a drawing of the type and it would appear to represent a species in *Dendrobium* sect. *Calcariferum*?

Dendrobium planicaule Ridl., Trans. Linn Soc., Bot. (ser. 2) 9: 168 (1922). Type: Dutch New Guinea: Utaqua River area, Camp VIb and VI c, 3900 and 5500 ft.", 1912, C. Boden Kloss (holo BM; iso K!).

NOTES: When describing the species, Ridley treated it as belonging to *Dendrobium* sect. *Grastidium*. He states that this species is "Allied to *Dendrobium erectifolium* J.J. Smith, but with smaller leaves, flattened sheaths, and an entire labellum. The flowers are solitary, fleshy, and dry black". This species is a *Monanthos* and not a *Grastidium*.

Dendrobium polyschistum Schltr. var. *graminiforme* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 576 (1912). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Kani Range, alt. c. 1000 m, Oct. 1907, R. Schlechter 16682 (holo B!).

NOTES: Schlechter (1911-14) states that "It is probable that this is a separate species, but, unfortunately, I have insufficient flowering material to decide the question at present. The flowers are whitish." The status of this taxon must remain unresolved until further collections of fresh material are made from the vicinity of the type locality.

Dendrobium sarcodes Schltr. var. *majus* Schltr., Repert. Spec. Nov. Regni Veg., Beih. 1: 589 (1912). Type: Kaiser-Wilhelms-Land: On trees in the forests of the Bismarck Range, alt. c. 500 m, Nov. 1908, R. Schlechter 18655 (holo B!; iso AD, AMES!, BO!, E, G, K!, L, NSW).

Note: It is difficult to determine an appropriate status for this taxon. Schlechter when describing *Dendrobium sarcodes* hinted that the variety *majus* might be considered as a separate species, but his meagre description of the variety and the fact that there is no extant type material of *Dendrobium sarcodes* for comparison, makes it difficult to determine its status accurately.

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